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Entrepreneurship Education in Sport Sciences: Implications for Curriculum Development

Tese elaborada para a obtenção do grau de doutor no ramo de Ciências da Educação, na especialidade de Teoria Curricular e Avaliação

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Dedicated to my family, which I love more than anything and appreciate all the support, love and friendship

All that I am, I owe to you!

Abstract

The purpose of this thesis is to promote entrepreneurship education through the introduction of entrepreneurial competences in the curriculum of sport sciences, in higher education. We gathered information from different sources, following a multiple method approach.

The analysis of the state of the art on entrepreneurship education showed that: theoretical contributions have been increasing; theory-building and theory-testing are still rooted in exclusive paradigms thus restricting a more eclectic analysis of the knowledge; a very significant share of research on the topic has sought to evaluate its results; the body of knowledge on entrepreneurship education is not consistent.

The analysis of entrepreneurial intentions, showed that there is a negative and significant value of subjective norms, the attitudes and the perceived behavioral control are the variables which have more influence, the variance explained is high, the model does not vary according to gender and professional experience. Then, the role of undergraduate curriculum on entrepreneurial paths of former students was analyzed. Three distinct profiles emerged: prevalence of undergraduate training, of continuing training, and of family and contact with professional context. A contextualized proposal to introduce entrepreneurial competences in the curriculum of sport sciences is provided.

Keywords: entrepreneurship, intrapreneurship, entrepreneurship education, sport sciences, formal curriculum, informal curriculum, entrepreneurial competences, curriculum development, entrepreneurial intentions, Theory of Planned Behavior.

Resumo

O objetivo desta tese consiste em promover a educação para o empreendedorismo, através da introdução de competências empreendedoras no currículo de Ciências do Desporto, no ensino superior. Reuniu-se informação de diferentes fontes, através de diferentes métodos.

A análise do estado da arte em educação para o empreendedorismo mostrou o seguinte: as contribuições teóricas têm aumentado; o desenvolvimento e a testagem de teoria ainda estão baseados em paradigmas únicos, restringindo uma análise eclética do conhecimento; grande parte da investigação tem procurado avaliar os resultados da aplicação de programas; e o corpo de conhecimentos na educação para o empreendedorismo não é consistente.

A análise das intenções empreendedoras revelou que existe um efeito negativo e significativo das normas subjetivas; as atitudes percebidas e o controlo comportamental percebido foram as variáveis que demonstraram ter mais influência; a variância explicada é elevada; e o modelo é invariante em função do género e da experiência profissional. Posteriormente, analisou-se o papel que a formação inicial teve nos percursos empreendedores de antigos alunos. Surgiram três perfis distintos: prevalência da formação inicial, da formação continuada e, da família e contacto com o contexto profissional. No final, propõe-se sugestões para promover competências empreendedoras em Ciências do Desporto.

Palavras-chave: Empreendedorismo, intra-empreendedorismo, educação para o empreendedorismo, ciências do desporto, currículo formal, currículo informal, competências empreendedoras, desenvolvimento curricular, intenções empreendedoras, Teoria do Comportamento Planeado.

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> "Our lives are not our own. From womb to tomb, we are bound to others. Past and present. And by each crime and every kindness, we birth our future..." by Cloud Atlas

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Introduction

> *Entrepreneurship is that concept we needed to invent in order to think and write the process which imagines and actualizes a future with enhanced the possibilities for living for people - be those users, customers, shareholders or citizens*
>
> *Steyaert, Hjorth & Gartner (2011, p. 3)*

1.1 Introductory note

Entrepreneurship, according to Baron and Shane (2008), is a process rather than a single event, involving opportunity identification and further exploitation to create something new. It is a crucial characteristic in today's society, extremely relevant to the worldwide economy and to global development, being associated with a capacity for innovation, initiative (Drucker, 2006), and creativity (Shane, Locke, & Collins, 2003).

Entrepreneurship education is a complex process and more and more people support the proposition that education systems can help promote entrepreneurship from basic education to university, in all areas (Hynes, 1996). The fact that entrepreneurship is teachable is no longer a matter of debate (e.g. Gorman, Hanlon,& King, 1997; Kuratko, 2005) and the impact of entrepreneurship education in developing entrepreneurial attitudes and intentions has been proved in many studies (e.g. Teixeira, 2010; Lanero, Vázquez, Gutiérrez,& García, 2011; Liñán, Rodríguez-Cohard, & Rueda-Cantuche, 2011).

Entrepreneurship is an integral part of any professional industry (Ratten, 2011) and, as a complex social phenomenon, is studied from different perspectives, as Gartner, Bird and Starr (1992) suggested. Although there is a growing trend to include other areas, most studies still focus in economics/business and engineering. In what concerns undergraduate education in other areas, besides business and economics, a more academically oriented entrepreneurship curriculum, directed to students who are less likely to possess business experience and contacts may be appropriate (Vesper & McMullan, 1988).

According to Neumaier (2003) sport sciences are a multifaceted and multidisciplinary field where different scientific perspectives and research questions emerge. This author refers that the complexity of sport is reflected in the multidisciplinary structure of research facilities at universities in which sport sciences is the subject of research and teaching. Although entrepreneurship has little recognition in the sports context, namely in the sports management literature (Ratten, 2012), Hardy (1997) highlights the importance of analyzing sports from an entrepreneurial perspective and contends that research should follow this tendency. Ratten (2011) refers that sports entrepreneurship concerns people or organizations related with sport that innovate in business procedures, creating something different from what has been done before.

There is a dearth of research examining sport sciences and entrepreneurship and according to Ratten (2012), few studies have empirically developed and tested a sport entrepreneurship construct and little conceptual or empirical research has been devoted to understanding the triggering conditions for sports entrepreneurship. Thus, the extent to which entrepreneurship can be developed within sport sciences undergraduate curriculum has not been addressed in scientific literature.

The number of sport entrepreneurs is increasing and they can play an important role in the economy, creating social value rather than just personal wealth (Ratten, 2012). We believe that this role can be promoted in higher education institutions through curriculum.

Higher education is at the pinnacle of education and largely determines its quality. Any changes in the society tend to be reflected in the curricula of higher education institutions, probably because they correspond to the top of formal education and the last step before students enter the world of work. Curricula should not therefore be isolated from the problems/needs of the society nor from its role to prepare specialists who will be responsible for future progress (Patesan & Bumbuc, 2010). To achieve this purpose, entrepreneurship education ought to be fostered and entrepreneurial competences should be promoted in the sport sciences curriculum, through the Six-Step Model (AEHESIS, 2006). This model reflects the key principles of the Bologna process

and proposes a methodological approach in sport sciences, coherent with the logic of competences, with the main purpose of reducing the gaps between social needs, in relation to the job market and, the related academic curricula (AEHESIS, 2006).

In sports science we can include, besides Sports Management, Sports Coaching, Exercise and Health, and Physical Education. In each one of these, entrepreneurship can occur and sports science students can benefit from it, becoming better professionals and more aware of their opportunities.

1.2 Purpose of the thesis

The research question which stimulated and guided this thesis is: *How to promote entrepreneurship education in the sport sciences curriculum in Portugal – Faculty of Human Kinetics?* Following previous appeals and trying to address some preoccupations and gaps found in the literature, this study was developed with the main purpose of fostering entrepreneurship education through the introduction of entrepreneurial competences in the sport sciences undergraduate curriculum. Notwithstanding focusing on a specific context, many insights can be derived for other contexts.

1.3 Thesis Plan

Four studies concerning entrepreneurship education and sport sciences were developed, comprising the main body of this thesis.

Chapter 3 and 4 comprises two conceptual studies. The conceptual study 1 - **Entrepreneurship education literature in the 2000s** - has the main purpose of address the state of the art in theory-building on entrepreneurship education, through the analysis of the contributions of the last decade (2001-2011). A literature review of published articles in top tier journals of Business, Management, Entrepreneurship and Higher Education was conducted and further content analysis.

The conceptual study 2 - **A systematization of the literature on entrepreneurship education: challenges and emerging solutions in the entrepreneurial classroom** - has two purposes: to systematize and structure the theoretical and empirical insights

produced in the area of entrepreneurship education; to analyze the main challenges and emerging solutions in the entrepreneurial classroom. A literature review of published articles in top tier journals of Business, Management, Entrepreneurship and Higher Education was conducted and further content analysis.

Chapter 5and 6 comprises two empirical studies. The empirical study 1 - **Theory of Planned Behavior and Entrepreneurial Intentions of Sport Sciences Students: Implications for Curriculum Design and Teaching** -has the main purpose of understand which variables most influence entrepreneurial intentions of sports science undergraduate students. In what concerns methods, Structural Equation Modeling were used to analyze a representative sample of sport sciences students, of Faculty of Human Kinetics.

The empirical study 2 - **Factors influencing the entrepreneurial life course of former students: a multicase study** -has the main purpose of ascertain the role that undergraduate training in sport sciences is likely to play in fostering specific entrepreneurship practices. In what concerns methods, a multiple case study based on interpretive and comparative research, using semi-structured interviews and content analysis as core research techniques, were used to analyze a sample of eight entrepreneurs/intrapreneurs, former students of sport sciences, of Faculty of Human Kinetics.

Finally, Chapter 7 provides a General Discussion where findings of the different studies were integrated into a single framework in line with the best practices of entrepreneurship education and curriculum design. Theoretical and methodological considerations, as well as practical applications were further discussed in order to foster entrepreneurial competences in the sport sciences undergraduate curriculum.

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Theoretical and conceptual framework

2.1 Introduction

This chapter is organized around three main themes: entrepreneurship and entrepreneurship education, higher education curriculum and society demands, entrepreneurship and the curriculum of sport sciences.

2.2 Entrepreneurship and entrepreneurship education

In this first part and to contextualize the present study, we analyze the theoretical roots of the concept of entrepreneurship and entrepreneurship education and, the main theoretical contributions in this field. We also differentiate business education from entrepreneurship education and review the entrepreneurship education literature as well as the main trends and approaches, since its beginning until today. Then we analyze the situation in Portugal, which is the context of the present study, to understand and contextualize the main findings and conclusions.

2.2.1 The concept of entrepreneurship.

Entrepreneurship is a crucial characteristic in today's society; it is associated with a capacity for innovation, initiative (Drucker, 2006), creativity (e.g. Shane, Locke & Collins, 2003; Drucker, 2006; Baron & Shane 2008) and it stimulates employment and economic growth. Entrepreneurs innovate and are in constant search of change, identifying and exploiting opportunities to create a different business or service (Drucker, 2006).

There are two opposite research lines in what concerns entrepreneurs' development: the traits approach, focusing on entrepreneurs' personal characteristics: *entrepreneurs are born* (e.g. McClelland, 1961; Brockhaus & Horwitz, 1986); and the behavioral or environmental approach, related with entrepreneurs actions in different environments, where entrepreneurship is seen as a learning process: *entrepreneurs are made* (e.g. Gartner, 1989; Minniti & Bygrave, 2001; Drucker, 2006). The traits approach has been criticized by several authors and, according to Low and MacMillan (1988) and

Gartner (1989) those studies present definitional and methodological problems (e.g. noncomparable samples, bias toward successful entrepreneurs, and the possibility that observed entrepreneurial traits are the product of entrepreneurial experience), making it difficult to interpret the results.

There is no single agreed-upon definition of entrepreneurship, probably because this concept has different intellectual roots and is also permeated with several disciplines. More important than a unique definition is to analyze different views and approaches that have emerged and to understand that according to each view, rooted in a specific discipline and perspective, this concept changes.

Cunningham and Lischeron (1991) argue that definitions of entrepreneurship vary and involve creating, finding opportunities, managing, controlling, and changing. For these authors (p.57):

> Entrepreneurship is seen as a reiterative process of personal evaluating, planning, acting, and reassessing which encourages people to take on responsibility for creation and innovation. This process involves creating the idea, assessing one's personal abilities, and taking actions now and in the future. It assumes that entrepreneurs have the responsibility for the venture, or share some of the risks and rewards of it.

According to GEM 2012 Global Report (Xavier, Kelley, Kew, Herrington & Vorderwulbecke, 2012, p. 18) “The entrepreneurship process is a complex endeavor that is affected by many factors including the prevailing attitudes within a society, the rate of activity and the kind of opportunities available, and the growth aspirations of entrepreneurs.”

Six schools of thought are described by Cunningham and Lischeron (1991), each with its own beliefs, organized in four different groups, to show how they may be useful for understanding the entrepreneurial process: *Assessing Personal Qualities* (The "Great Person" School of Entrepreneurship, The Psychological Characteristics School, School of Entrepreneurship); *Recognizing Opportunities* (The Classical School of Entrepreneurship); *Acting and Managing* (The Management School of Entrepreneurship, The Leadership School of Entrepreneurship) and *Reassessing and Adapting* (The Intrapreneurship School of Entrepreneurship).

The *"Great Person" School of Entrepreneurship* argues that entrepreneurs have traits and instincts that differentiate them from other people. In this school entrepreneurs are born, not made. For the *Psychological Characteristics School of Entrepreneurship*, entrepreneurs have unique values (personal values such as honesty, duty, responsibility, and ethical behavior; risk-taking propensity; and the need for achievement), attitudes and needs which drive them in their entrepreneurial paths and that are not learned in schools but in their life experiences and relationships with others. The *Classical School of Entrepreneurship* believes that creativity and innovation are the central characteristic of entrepreneurial behavior. For the *Management School of Entrepreneurship*, entrepreneurs are organizers of an economic venture, where they organize, own, manage and assume the risk. *The Leadership School of Entrepreneurship* assumes that entrepreneurs are natural leaders of people and they are able to adapt their style to the needs of the people. The *Intrapreneurship School of Entrepreneurship* encourages entrepreneurial activity within established organizations, recognizing the importance of entrepreneurial skills for complex organizations, and defines intrapreneurship as the development of independent units to create markets and develop services (Cunningham & Lischeron, 1991).

According to these authors there is a need to reconcile these various schools and beliefs about the field recognizing the importance and uniqueness of all of them and the selection of an entrepreneurial model/school depends on the information the researcher wishes to emphasize on the analysis of the entrepreneurial process. In this perspective the entrepreneurial process involves four steps that are in permanent interaction: recognizing opportunities, acting and managing, reassessing need for change and evaluating self.

Ten years later the issue of a definition and framework still remains. Shane and Venkataraman (2000) argue that entrepreneurship has lacked a conceptual framework and they provide one based on entrepreneurial opportunities as an attempt to enhance the legitimacy of the field. This framework involves different phases related with entrepreneurial opportunities: the existence, discovery (related with prior information and cognitive properties) and exploitation (related with the nature of the opportunity

and individual differences). Consequently, entrepreneurs are individuals who discover, evaluate and exploit them. In what concerns the modes of exploitation, two arrangements are presented: the creation of new firms and the sale of opportunities to existing firms. After analyzing the impact of this article on the field of entrepreneurship, over the past ten years Shane (2012) corrects some errors and discusses how the field of entrepreneurship has evolved in response to the publication of the original article. Despite the fact that debate still remains in many areas, and some areas have seen more advancement than others, there seems to be a consensus around the idea that entrepreneurship is a process that depends on both opportunities and individuals. As regards to the four dimensions of the article from which researchers appear to have drawn most heavily over the past ten years (the idea of entrepreneurship as a distinctive scholarly domain; the definition of entrepreneurship as a process rather than an event or embodiment of a type of person; the nexus of opportunities and individuals; and relationships, innovation, and new combinations), the field has advanced since the first article was written, reflecting thereby the contribution to the field. In the same line, Baron and Shane (2008) argue that entrepreneurship is a process rather than a single event that begins with opportunity identification and further exploitation to create something new.

According to Landstrom and Benner (2010), entrepreneurship research becomes more and more theory-driven, borrowing concepts/theories from other fields and creating its own concepts and theories, thus it is important to understand the assumptions and the intellectual roots from which these concepts/theories have evolved. These authors organize three eras of entrepreneurship research, emphasizing the main authors and contributes to the field, namely: *Economica Era* (1870 – 1940; Knight, Schumpeter and Kirzner's view); *Social Science Era* (1940 – 1970; Historical/Sociologist view, Psychologist/sociological view); and *Management Studies Era* (1970 until now).

In the same vein, Van Praag (1999) analyzes classic contributions on entrepreneurship and several views are presented: An Early Thought on Entrepreneurship, a Classical Thought on Entrepreneurship, a Neo-classical Thought on

Entrepreneurship, Entrepreneurship and Schumpeter, Entrepreneurship and Knight and a Neo-Austrian Thought on Entrepreneurship. An *Early Thought on Entrepreneurship* is dominated by Richard Cantillon (1680? – 1734) who introduced the concept of entrepreneur highlighting his role in the economic system. The entrepreneur was considered an arbitrager characterized by uncertainty and risk-bearing. Jean-Baptiste Say (1767-1832) plays a central role in the *Classical Thought on Entrepreneurship*, extending the entrepreneurial function as defined by Cantillon. In Say's theory of production, distribution and consumption, entrepreneur is the modern leader and manager within his firm, which needs to combine different qualities and experiences to create value. There are different authors that we can mention within the *Neo-classical Thought on Entrepreneurship,* although Alfred Marshall (1842-1924) has been the most representative, showing how important the entrepreneur was in neo-classical thought. In Marshall's view, the entrepreneur leads and manages his firm, driving the production (undertaking all the risks) and distribution process, coordinating supply and demand on the market, and capital and labor within the firm. Another important pioneer of this field was Joseph Schumpeter (1883-1950), which emphasizes innovation process as an endogenous process and as an important engine of the economic development. For him, the entrepreneur is an innovator and leader, but neither a risk-taker, nor a manager or a capitalist. According to Frank Knight (1885-1972) entrepreneurship requires uncertainty and capital to pay the remunerations which have been guaranteed, thus entrepreneurs must take decision, bear uncertainty and have enough capital. The Austrian mode of thing about the economy differs from the standard view of economist, where the market is analyzed in a state of equilibrium. Kirzner played an important role in the Neo-Austrian Thought on Entrepreneurship, arguing that entrepreneurs discover, correct and exploit profit opportunities, representing the equilibrating forces in the market process. This sequence of entrepreneurial assessment of opportunities represents a process that never ceases.

Entrepreneurship can be developed inside or outside an organization, in profit or non-profit enterprises, and in business and non-business activities with the main purpose of have creative and innovative ideas.

It is important to clarify that besides different approaches and perspectives about this concept, in the present study and in line with Krueger (1993), Drucker (2006), and others, we take a narrower definition of entrepreneurship and take it as the creation and development of a new venture, with new products/processes. Over the years, researchers have described different types of entrepreneurship, although it is not our purpose to do an exhaustive inventory of these types. Instead and besides the concept of entrepreneurship, we are going to focus in the concept of intrapreneurship, initially coined by Pinchot (1985), also called *corporate entrepreneurship* and *corporate venturing* and seen as entrepreneurship within existing organizations. In this work we operationalize intrapreneurship as the development of innovative service/products inside of an established organization, contributing thereby for its development (based on e.g. Kuratko & Montagno, 1989; Cunningham & Lischeron, 1991; Baron & Shane, 2008).

2.2.2 Factors that influence entrepreneurship.

Several empirical studies have been conducted to analyze which factors influence entrepreneurship, related with entrepreneurial attributes, or with the influence of different factors (e.g. family, contextual and social factors, professional experience and education).Table 2.1presents a summary of some of those studies.

Table 2.1. Factors that influence entrepreneurship: empirical evidence

Factors	Publications
Entrepreneurial attributes	
Determination	Lee-Gosselin & Grisé (1990); Timmons & Spinelli (2007)
Tolerance for ambiguity	Sexton & Bowman (1985)
Need for autonomy	Sexton & Bowman (1985)
Humility and enthusiasm	Toftoy & Jabbour (2007)
Failure	Learn with failure: Minniti & Bygrave (2001) Role of emotions in learning from failure: Shepherd (2004)
Self-confidence	Heinonen, Poikkijoki & Vento-Vierikko (2007); Soetanto, Pribadi & Widyadana (2010)
Persistence	Timmons & Spinelli (2007); Gompers, Kovner, Lerner & Scharfstein (2010)
Self-efficacy	Krueger & Brazeal (1994); Chen, Crick & Greene (1998)
Motivation	Shane, Locke &Collins (2003); Ferreira, Raposo & Rodrigues (2007)
Opportunities identification	Ray (1993); Venkataraman (1997); Shane & Venkataraman (2000); DeTienne & Chandler (2004); Kuratko (2005)
Risk-taking propensity	Franke & Luthje (2003); Kuratko (2005) May not be a characteristic that distinguish entrepreneurs: Brockhaus (1980)

Factors	Publications
Locus of control	Brockhaus & Horwitz (1986); Shane, Locke &Collins(2003); Franke & Luthje (2003)
Need for achievement	McClelland (1961);); Shane, Locke & Collins (2003); Franke & Luthje (2003)
Proactivity	Ratten (2012)
Innovation	Drucker (2006); Ferreira, Figueiredo & Pereira (2007); Schumpeter (2007)
Creativity	Ronstad (1985); Ray (1993); Baron & Shane (2007)
Leadership	Ray (1993); Baron & Shane, 2007; Timmons & Spinelli (2007)
Initiative	Ferreira, Figueiredo & Pereira (2007)
Problem solving skills	Spencer (1986); Ray (1993)
Planning skills	Spencer, 1986; Ray (1993)
Negotiation skills	Ray (1993);
Oral and written communication	Ray (1993);
Listening skills	Ray (1993)
Social competences	Social perception (perceiving others) Baron & Markman (2003), Ray (1993) Social adaptability, expressiveness Baron & Markman (2003)
Diversified and updated knowledge	Tavares (2003)
Family	
Exposure to family business/entrepreneurs in the family	Erkkila (2000); Ferreira, Raposo & Rodrigues (2007) Self-employed husband: Bruce (1999) Self-employed parents: Delmar & Davidsson (2000)
Genetic factors	Nicolaou & Shane (2009)
Contact with professional context	
Competition sports	Krueger & Neergaard (2012)
Projects organization and development	Ferreira, Figueiredo & Pereira (2007)
Business experience	Jo & Lee (1996); Davidsson, Lindmark & Olofsson (1994)
Social and contextual factors	
Job dissatisfaction	Brockhaus & Horwitz (2002);
Employment status	Delmar & Davidsson (2000)
Networks	Ronstad (1985); Ray (1993); Greve (1995)
Role models	Aldrich, Renzulli & Laughton (1997); Delmar & Davidsson (2000); Fry, Stephens & Van Auken (2006); Soetanto, Pribadi & Widyadana (2010)
Institutional environment/environmental conditions	Shane, Locke & Collins (2003); Lu & Tao (2010)
Political and economic uncertainties	Soetanto, Pribadi & Widyadana (2010)
Lack of initial investment	Soetanto, Pribadi & Widyadana (2010)
Education	
Delmar & Davidsson (2000); Ferreira, Raposo & Rodrigues (2007) Business education: Jo & Lee (1996)	

2.2.3 Business education vs. entrepreneurship education.

Several authors criticize the traditional business education/programs because they are failing to be relevant to the needs of economics and business and emphasize the importance to clarify that entrepreneurship education is different from business education (e.g. Gartner &Vesper, 1994; Solomon, Duffy & Tarabishy, 2002; Kuratko,

2005). Some authors criticize the business plan approach to teach entrepreneurship (e.g. Low & MacMillan, 1988; Honig, 2004; Gibb, 2005).

Two of the main goals of entrepreneurship education that differentiates it from typical business education, or that differentiates the entrepreneur job from the customary manager are: "the ability to generate more quickly a greater variety of different ideas for how to exploit a business opportunity and the ability to project a more extensive sequence of actions for entering business, either through start-up or personal acquisition" (Vesper & McMullan, 1988, p. 9). Gartner and Vesper (1994, p.180) defined entrepreneurship as "business entry, whether by start-up or acquisition and whether independently or within an established organization". Despite the connection between entrepreneurship and small business, authors differentiate the process of entry into independent business (transitory event) and management of an ongoing firm (continuous, evolving activity).

2.2.4 The concept of entrepreneurship education.

According to Solomon (2007, p. 168, 169):

> Entrepreneurship education is an ongoing process that requires a myriad talents, skills and knowledge leading to unique pedagogies capable of stimulating and imparting knowledge simultaneously (...). The entrepreneurial experience can be characterized as being chaotic and ill-defined, and our entrepreneurship education pedagogies should reflect this characterization.

The GEM 2012 Global Report (Xavier et al., 2012, p.35) defines entrepreneurial education as "The extent to which training in creating/managing new, small or growing business entities is incorporated within the education and training system at all levels". According to this report, primary and secondary education was rated as one of the less favorable structural conditions by most countries.

Entrepreneurship is seen as the engine driving the economy and actually there is a large variety of meanings of entrepreneurship that is reflected in the development and diversity of education programs that encourage entrepreneurship. The term

entrepreneurial education is not consensual, implying that this varies depending on the context (national and local). The absence of an agreed definition of the discipline of entrepreneurship, which changes depending on times and places, conditions even more the clarification of the relationship between education and entrepreneurship. In order to avoid conceptual confusion Erkkila (2000) suggests that the term Entrepreneurial Education should be used. Based on the findings of her study, Erkkila (2000, p.192) concludes that:

> The concept of entrepreneurial education is best seen contextually. As it appears in the current literature, entrepreneurship education is more directly focused upon small business and entrepreneurship, whereas enterprise education is aimed at the development of enterprising behavior, skills, and attributes, not only for business use.

There is a lack of an agreed-upon definition of what entrepreneurship education is and Fayolle and Gailly (2008) aware of this gap, analyze several definitions of entrepreneurship education, referring that entrepreneurship definitions have been applied to entrepreneurship education, according to different settings and that this is not a problem. They even suggest that entrepreneurship programs should focus on a clear concept of entrepreneurship, what would help to clarify the entrepreneurship education definition. They argue that the main problem is the lack of a precise definition of entrepreneurship as teaching field, more than the number of existing definitions, where philosophical conceptions about teaching, the role of teacher and the role of students should be clarified in each course.

2.2.5 The importance of entrepreneurship education.

Entrepreneurship education is a complex process and more and more people defend the idea that education systems can help promote entrepreneurship from basic education to university, in all areas (Hynes, 1996).

2.2.5.1 The evolution of the field before 2000.

Although some researchers still argue that it is not possible to teach entrepreneurship, for most of them, the fact that entrepreneurship is teachable is no longer a matter of debate (e.g. Gorman et al., 1997; Kuratko, 2005; Drucker, 2006) and the impact of entrepreneurship education in developing an entrepreneurial attitude has been proved in many studies, as we will see in further reading. In this line of thought, Gibb (2005) defines entrepreneurship as encompassing a set of behaviors attributes and skills that can be practiced, learned and developed to some extent, there are certain environments that can enhance their development, as the administration of their own business. It further argues that the adoption of entrepreneurial behavior is not unique to certain individuals, although it may more easily arise in some individuals than others. The crucial question it is not if it can be learned, but how it should be taught, which the best methods and strategies to use.

The beginning…

The first MBA entrepreneurship course (Management of New Enterprises) was held in 1947 in Harvard's Business School and until 1970 few universities offered entrepreneurship courses (Katz, 2003). In 1971 the University of Southern California developed the first MBA in Entrepreneurship, followed by the first undergraduate concentration in 1972 (Kuratko, 2005). After that, the academic discipline of entrepreneurship has grown, not only in the USA, but also in Europe and Asia. The number of universities offering courses in entrepreneurship grew and given the proliferation of classes, it seems that entrepreneurship is being legitimated as a course of study (Vesper & Gartner, 1997; Katz, 2003).

The eighties…

Sexton and Bowman (1984) mention some issues within the field of entrepreneurship that need particular attention: the absence of a definition, the relationship of this field with other academic disciplines, the need to identify the characteristics of

entrepreneurship students and to connect them to the educational process to increase effectiveness of entrepreneurship education programs; and, the development of a respectable body of knowledge.

The importance of successful learning experiences in generating and increasing interest in entrepreneurship is emphasized by Ulrich and Cole (1987) that argue that learning style preferences not only can enhance entrepreneurial propensity, but also has implications for the educational process. Entrepreneurial learning style preferences tend toward active experimentation with some balance between concrete experience and abstract conceptualization.

Zeithaml and Rice (1987) conducted a survey in some of the pioneering universities of entrepreneurship education in US, where several important issues emerge: (i) 92% of the respondents engaged in some type of entrepreneurship/small business program (ranged from a single undergraduate course to graduate and/or undergraduate specializations), reflecting that interest in the field is increasing, as well as the popularity of this courses among students; (ii) many of the well-developed programs are found among small- and medium-sized schools, pursuing this area quite aggressively; (iii) entrepreneurship education programs are quite similar throughout the United States at both the undergraduate and graduate levels where most programs have a small business orientation; (iv) educational and assistance programs for practicing small business people are developed by separate centers; (v) efforts are made to track students with an interest in entrepreneurship. They still propose suggestions for further research in this field: (i) the emerging opportunities for entrepreneurship programs to evolve in a manner that is consistent with recent conceptualizations of entrepreneurship; (ii) compatible direction some programs may wish to take would involve a heavy commitment to research, in order to increase the prestige and credibility of the field; (iii) research on the teaching methods frequently used in entrepreneurship programs, as well as follow-up and tracking procedures developed to evaluate the effectiveness of different programs; (iv) evidence exists that entrepreneurship courses, programs, and centers may be a source of funds for the university.

Ronstadt (1985), McMullan and Long (1987) and McMullan (1988) discuss the emergence of entrepreneurship as an academic discipline and its role within the traditional business school structure. It is highlighted the growing body of entrepreneurship literature and theories necessary for recognition as an established discipline. Each also emphasizes a particular aspect of the role of entrepreneurship education. The importance of entrepreneurship education to economic development and the approach to entrepreneurship education as a component of the community infrastructure is emphasized by McMullan and Long (1987) and McMullan (1988). According to McMullan and Long (1987) developing quality programs for entrepreneurs will require more than just political will, such as theoretical foundations, knowledgeable and motivated academic leadership, trained support personnel, adequate financing, and appropriate structural forms. The functional framework of management education is not appropriate for entrepreneurship education and several changes must be made.

Ronstad (1985) differentiates the *old school* from the *new school*. The programs focus of the old school focus in the business plan and exposure to experienced visitors and in entrepreneurial traits and characteristics. The components of this new school of entrepreneurship are described, including entrepreneurship as a career process, as a multiple venture process, as a process of multiple concept configurations and as a process with limited time for venture investigation. This new school emphasizes critical thinking and ethical assessment and is based on the premise that successful entrepreneurial activities are a function of human, venture and environmental conditions. Based on these elements, he outlines the objectives, course structure and content of an entrepreneurship course and argues for the need to develop programs of entrepreneurship.

This argument is made even more forcefully in an article by Vesper and McMullan (1988), who not only support the concept of offering degree programs in entrepreneurship but also outline the elements of a degree program in Entrepreneurial Studies. Although this degree shares some elements with business administration masters programs, it will be different from MBA programs. Students who complete this degree will have: greater knowledge about entrepreneurship and how it works,

knowledge of business basics, greater ability to spot and to use new business opportunities, enhanced capability to stimulate other people to share future visions.

In a survey of university entrepreneurship educators Hills (1988) identified three factors that affect the outcomes of entrepreneurship education efforts: educational objectives, administrative and program development issues and course attributes. Most important educational objectives cited were related with the increase awareness of students related with new venture option and entrepreneurship as a career option. As regards the organizational issues, it was viewed as critical the support of the college administration, it was consensual that entrepreneurship course should be more experientially oriented, that faculty research is important to an entrepreneurship education program and business outreach programs were also supported. In what concerns course attributes, the development of a business plan project and entrepreneurs as speakers and role models were those that were considered most important. More research is needed on the measurement of learning outcomes.

Vesper, McMullan and Ray (1989) identify and discuss the limitations of the present business school model in fostering and developing entrepreneurship: functional differentiation, rationalization, flexibility and customization, practice and participation, technological receptivity and internationalization. There is an appeal for a new comprehensive approach for entrepreneurship education that overcomes these limitations.

Curran and Stanworth (1989) aware of the development of small business education and training as well as the need to identify more clearly the major forms of enterprise and training education, their target populations and their resource effectiveness, propose a broad framework for entrepreneurship and small business education, where they distinguish different types of small business training: entrepreneurial education (if entrepreneurship is seen as a creative economic process, there are doubts about the efficacy of small business education), education for small business and self-employment (preparing people for small business ownership of the conventional kind, where the majority of new start-ups involve replicating or acquiring an existing business), continuing small business education (specialized version of adult

continuing education with the purpose of enable people to enhance and update their skills) and small business awareness education (has the purpose of increasing the number of people who are knowledgeable about small business as a career alternative).

The nineties…

Robinson and Haynes (1991) conducted a survey at universities and main findings indicate that educational programs are widely spread throughout this segment of the educational infrastructure but that most remain underdeveloped. The challenge for entrepreneurship education lies on the improvement of existing programs and staff, not in increasing the number of institutions offering entrepreneurship courses. Several obstacles that compromise the development and quality of the field are still identified: lack of solid theoretical bases; the need to test entrepreneurship theories, models, and methods (this can be achieved developing graduate doctoral), and another obstacle is the lack of formal academic programs, representing a lack of commitment on the part of institutions.

The emergence of entrepreneurship as an academic discipline and its role within the traditional business school structure is discussed by Plaschka and Welsh (1990) which present two frameworks of entrepreneurship programs. The first combines the dimensions of number of entrepreneurship courses and degree of integration. The second combines the dimensions of number of disciplines and transition stages in a firm. These frameworks show that educational needs may differ according to the stages of development and entrepreneurial career roles and therefore program designers should provide alternative structures and learning mechanisms to meet these needs. The value of the models lies in their usefulness, individually or in combination, in studying and designing entrepreneurship programs. These authors recommend an increased focus on entrepreneurial education and more reality and experientially-based pedagogies, based on problem solving approaches.

Entrepreneurship is a very complex idea and it is important to be aware of the wide range of beliefs that involve this concept and regarding this, Gartner (1989) explored the underlying meanings researchers and practitioners have about

entrepreneurship and outlined some themes that characterize the major issues and concerns that constitute the debate about entrepreneurship as a field of study. Eight themes emerged from this research which reflects the diversity of thoughts about this subject and that have to be in mind when conducting entrepreneurship research: The Entrepreneur (individuals with unique abilities), Innovation, Organization Creation (behaviors involved in creating organizations), Creating Value, Profit or Nonprofit, Growth, Uniqueness and The Owner-Manager.

Béchard and Toulouse (1991) identified four educative orientations (conformist, adaptive, transformative, and alternative), existing university courses and programs in the field of entrepreneurial education. Three of these, conformist, adaptive and transformative, are pedagogical approaches which focus on course content. The alternative orientation, as an andragogical approach, emphasizes process and it is recommended because it integrates theories about adult education, learning and entrepreneurship. Unfortunately and according to this author, the pedagogical model is the dominant model in entrepreneurship courses which recommend a change to the alternative orientation, because while the pedagogical model is focused on theories transmission related to feasibility studies and business planning, the alternative orientation emphasizes the independent action of the learner and self-appropriation of the knowledge, where the teacher shares his knowledge with others and is at the disposal of the learner, that assumes the responsibility for his own education. The methodologies used are: peer teaching, collective solutions to problems, field work, discussion, self-evaluation and correspondence courses.

Knight (1991) proposes a framework and methodology for teaching entrepreneurship that includes the following elements: opportunity identification, strategy development, resource acquisition and implementation. These elements of entrepreneurship apply at the group, organization, industry and society levels, as well as at the individual level, and that a framework for teaching entrepreneurship should be extended to include these dimensions. To complete the framework, it is suggested the inclusion of functional exposure and startup strategies.

Solomon and Fernald (1991) report the results of three surveys on the development of courses, academic programs, seminars, and workshops in small business management and entrepreneurship in the USA administered from 1979 to 1986. The findings show a growing development of small business management and entrepreneurial courses and programs in colleges and universities and this phenomenon is not likely to dissipate in the next fifteen years. In fact, its growth can be expected to increase. Colleges and universities should continue to develop innovative methods and programs for teaching this dynamic field of study.

The effects of the project method of teaching entrepreneurship are investigated by McMullan and Boberg (1991) and further compared to case study. Results indicate that, while the case study is valuable teaching method, the project method is more effective in achieving most levels of learning defined by Bloom's Taxonomy of Learning Objectives in increasing the interest of start a new venture.

Gartner and Vesper (1994) analyze and discuss the descriptions of the experiments on entrepreneurship education and present entrepreneurship education experimentation successes (e.g. business plan for a good or product rather than a service required, former students-become-entrepreneurs back to speak, entrepreneurial financial planning used, negotiating exercise to buy or sell a company) and failures (computer simulation game used for two years, entrepreneurship as a summer course: too little time, interviews with entrepreneurs and book reviews not successful), in different countries what reflects the considerable diversity and efforts at this level.

Fillion (1994) stresses the importance to differentiate the entrepreneurial education from traditional education, as well as the fact of this education should start at primary level. Entrepreneurial education should focus on proactivity, developing imagination skills that will allow students to develop visions and control their destiny. Ten practical steps of entrepreneurial teaching are presented: look at where you stand as a teacher, know the world of entrepreneurs and develop imagination, eliminate pressure to conform, promote autonomy and leadership among students, use real-life examples in teaching, encourage students to define their own visions, help students to

identify their interests and motivations to learn, create an open attitude towards the context, generate opportunities for students practice their ideas and, become a better teacher with energy and dynamism that motivate students.

Four major types of resources available to academics and consultants interested in entrepreneurship or disciplines related, are analyzed by Katz and Green (1996): academic programs (with an emphasis on PhD programs in the field – have increased in the last years), text-based teaching resources (have also increased not only in number, but also in the quality provided, beside books and compendiums, several organizations provide sample business plans and information in this field), internet-based resources (have also increased, reflecting the technological evolution however internet materials need to be review to assess their credibility) and research resources (two major sources: peer-reviewed journals and research compendia series which have also increased).

Vesper and Gartner (1997) present the results of a survey that ranked university entrepreneurship programs with the main purpose of measure the progress in entrepreneurship education and to find the right criteria. The most frequently offered entrepreneurship courses were: entrepreneurship or starting new firms, small business management, field projects/venture consulting, starting and running a firm, venture plan writing and venture finance. However there were some points during the survey that were not very clear, namely: the way academics ranked other entrepreneurship programs; evaluators did not specify the criteria they used to rank entrepreneurship programs, did not offer their specific weights for each criteria, and were not asked to provide a judgment of their depth of knowledge of other programs. Given that currently there are no criteria for assessing the quality of entrepreneurship programs, authors bring some insights from a highly successful and visible evaluation effort in higher education, the education pilot criteria for the Malcom Baldrige National Quality Award. This is just one approach to a comprehensive and detailed evaluation of entrepreneurship programs, because the criteria for determining the quality of entrepreneurship education programs should not become fixed at this time. However authors stress the importance of agreed criteria to evaluate the programs.

In the field of entrepreneurship education and before 2000, there are two important studies on literature review - from Dainow (1986) and Gorman et al. (1997) - that are worthwhile to mention.

Dainow (1986) analyzed the literature on entrepreneurship education since 1971 until 1984, categorizing articles as empirical or descriptive, with further groupings of contents, context and target audiences. As regards to the contents, the area of needs assessment has received the most attention, when compared to evaluation that has been underdressed. In what concerns the context, the study found that most items are focused on educational institutions, mostly college or university. As regards the target audiences, the most focused items are practicing owner/manager, when compared to potential owners/managers. Finally, Dainow (1986) calls for a stronger empirical focus and experimental studies, more systematic collection and analysis of data, increased attention to evaluating the effects of training and education, more careful profiling of target audiences, greater relationship with theory and practice in the related field of education and more emphasis on the high school level. He appeals for future reviews in this field with methodological refinements.

Gorman et al. (1997) analyzed the literature of entrepreneurship education since 1985 until 1994, where articles were first categorized as being empirical or descriptive. Then they were further grouped by target market (students enrolled in the formal education system, out-of-school potential entrepreneurs, existing business owners, and others), and by content (entrepreneurial propensity, pre-startup, post-startup, and articles about educational process and structure). This review brings us some findings that are interesting to analyze and to compare with Dainow's (1987) previous review, despite the focus of analysis not being the same.

There are some issues that emerge from the various articles reviewed, namely from articles dealing with teaching strategies and curricula, such as the need to distinguish among entrepreneurship, enterprise and small business management education and to differentiate each of these from traditional approaches to management education. A focus on attributes and skills as well as tasks, elements of experiential learning focused in the active participation of the learner, and content

directed to stage of venture development are some of the components of the ideal structure and there is a lack of multidisciplinary approach, evolving fields other than Business.

Results show that the fact that entrepreneurship can be taught is already accepted; entrepreneurship courses and programs have increased, although there are some inconsistencies; entrepreneurial attributes, attitudes toward entrepreneurship and entrepreneurship awareness can be positively influenced by educational programs; there is still some resistance by small business owner/managers to education and training.

According to Gorman, et al. (1997), and as suggestions for future research and gaps that have not still been addressed, it is emphasized the need to develop programs that address the specific needs of target markets, the need of use existing theory drawn from other disciplines, the utilization of basic quasi-experimental controls and more detailed descriptions of the programs and the research samples, and the improvement of research designs and methodologies. They still highlight areas for future research, such as: propensity, namely attitudes toward entrepreneurship, measuring the overall effectiveness of entrepreneurship education programs; the variation of content and process according to stage of firm development and target market; focus on entrepreneurship education for primary and secondary school and to existing business owners; the needs of educators, financial intermediaries, counselors and advisors.

When compared to the literature review conducted by Dainow (1986), Gorman et al. (1997) mention that the focus on empirical research has increased, especially in the area of educational process and structure, although it could still increase and there are issues that still appear relevant today, such as the characterization of target audiences, focus on social sciences and emphasis on the high school level.

After reviewing the literature and, presenting important studies and findings within entrepreneurship education field, in the different decades before 2000, we summarize researchers' main concerns. They are related with several issues, which are typical of an emerging field that still needs to be consolidated, such as: the definition and frameworks for entrepreneurship education; the body of knowledge; the evaluation

of the state of the field; a criteria for assessing the quality of entrepreneurship programs; the relationship of the field with other academic disciplines; the effectiveness of entrepreneurship education programs, skills and methodologies; the differentiation of business education from entrepreneurship education; and, the specificity of the programs according to individual needs.

Findings in this period show that the framework of management education is not appropriate for entrepreneurship education; the university administration should support these programs, because they represent a source of funds; and the relationship between research and the programs development and improvement it is also emphasized. It is important to be aware of the diversity of thoughts and conceptions about entrepreneurship when designing programs and programs should meet individual needs according to the stages of development and entrepreneurial career roles.

Table 2.2. Best practices and main challenges identified in the literature review

What emerges from (and for) the entrepreneurial classroom?
Best practices and strategies that entrepreneurship educators should promote: - Experiential learning, rather than the transmission of knowledge; - Successful learning experiences to generate and increase interest in entrepreneurship; - Learner's active participation; - Critical thinking and ethical assessment; - Peer teaching, collective solutions to problems and discussion; - Problem solving approaches; - Direct participation of experienced entrepreneurs or former students in training programs; - Role models; - Proactivity, imagination skills, autonomy, leadership and opportunity identification training; - Knowledge of business basics and negotiating exercises; - Field work and project method; - Adapt the programs to individual needs; - Entrepreneurial awareness and entrepreneurial attitudes;
Main challenges that still remain: - Test and increase research on entrepreneurship theories, models, methods and learning outcomes; - To develop a consensual criteria for assessing the quality of entrepreneurship programs; - Involve programs with research; - Follow-up and tracking procedures to evaluate the effectiveness of programs; - Improve program's theoretical foundations, knowledgeable and motivated academic leadership, trained support personnel, adequate financing and commitment on the part of institutions;

There has been an increase and improvement of different issues that reflect the evolution of the field, such as: entrepreneurship literature, interest in the field,

academic programs, resources, and criteria for assessing programs. However, there is still lacking solid theoretical basis and commitment on the part of institutions. Different skills and methodologies are proposed in order to increase teaching effectiveness as shown in Table 2.2 that presents a summary of the best practices and challenges that still remain, before 2000.

As regards the state of the art of entrepreneurship education in the last decade, it is analyzed in the conceptual studies developed in this thesis.

2.2.6 Entrepreneurial activity in Portugal.

First of all it is important to note that economic activity in Portugal has been heavily affected by the international financial and economic crisis, with particular impact on the unemployment rate in the country (SPI Ventures, IAPMEI, & Fundação Luso-americana, 2010). The main conclusions of the studies conducted under the GEM Portugal 2010 (SPI Ventures et al., 2010) reflect two dimensions: the level and characteristics of entrepreneurial activity in Portugal and the structural conditions of entrepreneurship in the country.

As regards the characteristics of the entrepreneurial activity in Portugal, the study indicates that the number of female entrepreneurs equals about half of the number of male entrepreneurs who also exhibit a higher level of skills or knowledge to create a business. The study shows that that the majority of entrepreneurs are aged between 25 and 34 years old (this age range decreased when compared to 2007, when it was between 35 and 44 years old). As to the motivations to start a business most entrepreneurs are motivated by opportunity, although the percentage of entrepreneurs motivated by necessity increased when compared to 2007 (31.1% in 2010 vs. 22.7% in 2007).

In what concerns structural conditions of entrepreneurship, GEM Portugal 2010 emphasizes ten, namely:

a) financial support (availability of funds to emerging and growing businesses);

b) government policies (related to taxes, regulations and their application and their influence in emerging and growing businesses);
c) government programs (which directly support emerging and growing businesses);
d) education and training (degree of incorporation of entrepreneurship contents at different levels of the education system, as well as the impact of entrepreneurship education and training);
e) research and development transfer – R&D – (identification of business/commercial opportunities in R&D and access to R&D by emerging or growing businesses);
f) commercial and professional infrastructure (influence of institutions and commercial, accounting and legal services in the development of small, emerging and growing businesses);
g) market opening/barriers to entry (degree that prevents changes in commercial agreements and procedures, preventing emerging and growing firms from competing and replacing suppliers and consultants recursively);
h) access to physical infrastructure at prices that are not discriminatory for small, emerging and growing businesses (e.g. communication, transportation, natural resources);
i) cultural and social norms (degree that these norms encourage or discourage individual initiatives related with new businesses or economic activities); and,
j) protection of intellectual property rights of emerging and growing businesses.

Cultural and social norms (mainly the lack of incentive to the individual success), were reported as the less favorable structural conditions. National experts consulted for GEM 2010 argue that Portuguese culture is poorly targeted to entrepreneurship. In most cases, entrepreneurial activity in Portugal has arisen as a result of unemployment, associated with the current economic and financial crisis. Government policies (namely the excess of bureaucracy, particularly in obtaining licenses and tax burden) were also considered a less favorable structural condition.

There are other important aspects that are worth mentioning: financial support (the availability of government subsidies) was considered one of the factors to foster entrepreneurial activity; however the difficulty of getting financed was identified as one of the main barriers to entrepreneurship. In what concerns the promotion of entrepreneurship education and training, in higher education institutions, it was considered one of the most positive aspects by the national experts (and higher than in 2007). However, the reduced attention given to entrepreneurship in primary and secondary education was identified as one of the less favorable aspects within this structural condition (and lower than in 2007).

In general, and in what concerns most structural conditions (financial support, government programs, education and training, commercial and professional infrastructure, access to physical infrastructure and protection of intellectual property rights) expert's opinion did not change significantly when compared with 2007 and there were not found differences between Portugal and innovation oriented economies and the EU. In what regards government policies and research and development transfer the results of 2007 were more favorable than results of 2010 although they do not deviate significantly from the averages of innovation oriented economies and the EU.

The condition market opening/barriers to entry presents less favorable results than in 2007 and when compared with innovation oriented economies and the EU. Social and cultural norms (which obtained the less favorable appreciation from national experts), do not present significant differences between 2007 and 2010, but results are less favorable when compared with innovation oriented economies and the EU.

2.2.7 Entrepreneurship education in Portugal.

Portuguese schools are implementing entrepreneurship projects and there is even one organized by the Department of Innovation and Curricular Development within the Minister of Education aimed at the on-going development of students' key competences (risk taking, initiative, resilience, planning, organization, creativity, innovation and communication) and the appropriation of an entrepreneurial spirit by schools and education communities (Ferreira, Figueiredo & Pereira, 2007). Several other projects

begin to appear organized at the level of municipalities and in collaboration with companies.

On the issue of higher education in Portugal, the first institution to offer entrepreneurship education was Catholic University in 1992 and Redford and Trigo (2007) sums up entrepreneurship education and mentions two different trends - the teaching of entrepreneurship subjects at different institutions and the development of entrepreneurship centers. Most of the lecturers surveyed in their study said that their university planned to set up an entrepreneurship/innovation center. This development has appeared as a response to current market needs and the lecturers' interest in addressing this subject matter (Redford & Trigo, 2007).

As regards to the introduction of entrepreneurship education in higher education institutions in Portugal, and based on the analysis of 2004/2005 programs conducted by Redford and Trigo (2007) it was found that: 41% of courses offered in the 17 universities analyzed appeared for the first time in 2003/2004; 27 courses were taught in Portugal during the academic year of 2004/2005; teaching areas were related with management, entrepreneurship and finance/accounting. However pedagogical methods were still much focused on business plan creation and theoretical lectures and seldom made use of computer business simulations, role playing or internships. In turn, the more frequent subject matters were: opportunity identification and assessment, market analysis, financing, business plan development, competence in entrepreneurial behavior and company creation and registry (for example, in a country that is as averse to risk, the subject *Bankruptcy Control and Prevention* is one of the matters less addressed). In what concerns study materials, books written by academics, academic journal articles and foreign case studies (written in English) were the most frequently used in classes. Few universities (only 8.3%) had support from private companies to help in financing and promotion of entrepreneurship education.

Actually things have evolved and postgraduate offers have substantially increased in Portuguese universities, although there is still a trend to promote these skills in business, management and engineering courses.

More and more Portuguese universities serve as incubators for companies and there are initiatives aimed at entrepreneurship training and also the promotion of an entrepreneurial culture. In addition to teaching, they include other activities, such as workshops, seminars, conferences, courses, idea or entrepreneurship competitions, technology fairs and entrepreneurship labs.

As regards to the Technical University of Lisbon (TUL), that is our context of study, it is important to describe the initiatives that TUL- which has seven schools, one of which is the Faculty of Human Kinetics (FHK)- has undertaken to foster entrepreneurship, focusing on two main aspects: entrepreneurship training (56 curricular units on entrepreneurship and innovation) and university and school support structures such as workshops to transfer knowledge and technology, support centers, science and technology parks (Gonçalves, 2010). This author says that around 30% of technology-based companies with connections to universities came from TUL schools, which shows its importance in fostering these initiatives.

In what concerns future initiatives and according to Redford and Trigo (2007) Portugal should analyze international models of entrepreneurship education, as well as existing well-developed support structures. There are other initiatives directed to all society, such as seminars, competitions, in different settings and promoted by different entities, such as: COTEC, AUDAX, OTIC, Fundação Luso-Americana, among others.

2.2.8 Summary.

Entrepreneurship has different meanings due to its relation with several disciplines and to the different approaches through which it can be observed and it is therefore important to clarify its intellectual roots and the approach used. Its importance in the worldwide economy and contribution to global development is no longer a matter of debate.

We should highlight that entrepreneurship education is different from business education and this difference lies essentially in its focus that, in the case of entrepreneurship education, lies in the capacity to generate business ideas and to develop those ideas. Actually the importance of entrepreneurship education in all fields

of study has been widely recognized and the fact that entrepreneurship is teachable is also consensual, whereas different recommendations emerge on how an entrepreneurial attitude should be developed. However, the absence of a consensual definition of entrepreneurship is reflected in the lack of an agreed-upon definition of entrepreneurship education and it is therefore important to clarify conceptions about teaching, the role of the teacher and the role of students. In this chapter a brief characterization of entrepreneurship education is made since the moment it emerged, in 1970, until 2000's, with the purpose of enabling an analysis of the evolution of the field, its main trends, approaches, obstacles and concerns.

In current studies about entrepreneurship and entrepreneurship education, we should not ignore the international financial and economic crisis and its impact on a country dynamics. In the case of Portugal the economy and the unemployment rate have drastically changed in the last years. In what concerns the structural conditions of entrepreneurship and in particular education and training, there is a slight improvement in higher education institutions, when compared to initial levels of teaching.

2.3 Higher education curriculum and society demands

In this second part we will focus on the concept of curriculum, its development and revisions/improvements, and on the relationship between the curriculum and higher education institutions and the society, in order to contextualize the main findings and conclusions of this study. A curriculum is a multidimensional and complex construct with several definitions that evolved and changed through time, in line with social needs, and the first step is to clarify which concept we are going to use. Several theories and approaches for curriculum revisions are presented. Then the concept of competences is addressed and contextualized within the framework of the Bologna process, where the *Sense of initiative and entrepreneurship* appears as one of the eight key competences to be developed in EU countries, and lastly the concept of entrepreneurial competences is presented and analyzed.

2.3.1 The concept of curriculum.

Although in the present study, we are going to focus on formal/manifest and informal curriculum, we acknowledge that the term curriculum has different meanings as it will be examined next. According to Kelly (2009) the formal curriculum is related with formal activities organized by schools in specific periods of teaching time, approved by state or local boards (e.g. subject matters, learning experiences, objectives, rules and regulations of an institution). Informal activities related with the organizational culture inside academic institutions and that happen in a voluntary basis, at lunch-times, after school hours belong to informal curriculum. Schultz (2010) defines this curriculum as the one learned in schools that does not occur through explicit instruction (e.g. study visits), related with school culture and expectations of all stakeholders that are part of the educational process.

On the other hand, Goodlad (1984) proposed five different ideas of curricula: the ideal curriculum (ideals of curriculum claimed by governments, special groups of interest and teachers' professional organizations), the formal curriculum (the aforementioned definition), the perceived curriculum (teachers' interpretation of formal curriculum), the operational curriculum (what actually takes place in the classroom), and the experiential curriculum (what students do, think and derive from the operational curriculum).

According to Tanner and Tanner (1989) during the early decades of the twentieth century the conception of curriculum as cumulative tradition of organized knowledge has been challenged. Although several professionals agree with this conception, more perspectives have emerged, where curriculum is seen as: (a) modes of thought; (b) race experience; (c) guided experience; (d) a planned learning environment; (e) cognitive/affective content and process; (f) an instructional plan; (g) instructional ends or outcomes; and, (h) a technological system of production. The differences between these conceptions are related with the points of view and perspectives on which the curriculum is studied and all of their present limitations. While the link between school and life/society is emphasized, the truth is that the existence of the school, of the academic environment is not justified unless it provides unique experiences of learning

that cannot be obtained elsewhere. Due to these limitations, Tanner and Tanner (1980, p. 43) proposed a more comprehensive and experimental conception: “reconstruction of knowledge and experience, systematically developed under the auspices of the school (or university), to enable the learner to increase his or her control of knowledge and experience”.

This conception was first developed by Tyler (1949) and further improved by Taba (1962), and since the seventies a big effort has been made to operationalize the curriculum, because most of the previous approaches focused on theory. A curriculum is characterized by its diversity, complexity and dynamism, and it refers to educational plans of an institution, school, college or even a department, strongly mediated by the students and the society that it serves. It represents the process and substance of an educational program, encompassing its purpose, design, conduct, and evaluation of educational experiences and the best way to portray the curriculum is by its purposes and intentions (Yorke, 2003).

Undergraduate curriculum refers to the knowledge, principles, values and skills that students must achieve in the end of undergraduate education, constituting itself as a body of courses (García & Ratcliff, 1997). It is important to develop first-cycle of higher education in terms of transition between school and society and part-time work during classes attenuates the boundaries between these two contexts, allowing the student to engage with society. The success of first-cycle is related with the role that student can play in society, in all areas, not only in the professional field (Yorke, 2003). Curricula should reflect disciplinary differences and the interests of external stakeholders and for higher education encompass the notion of employability, the notion of academic standards has also to evolve multidisciplinary. The student should be able to master the content and also to apply the knowledge gained in different situations, many of them involve working productively with others (Yorke, 2003).

2.3.2 The process of curriculum development.

As a framework for curricular decision making and teaching behavior, Jewett, Bain and Ennis (1995) presented five educational belief systems, or value orientations in Physical

Education, that differ in the priority assigned to the three sources of curriculum (i.e. subject matter, learner, and society) an in the idea of being a physically educated person, namely: disciplinary mastery (focus in the subject matter: students master the content of the most important subjects), self-actualization (focus in the learner: to promote personal development and the student's growth and autonomy), social reconstruction (focus in the society: emphasize the achievements of socio-cultural goals), learning process (focus both in the learner and subject matter: emphasize the student's learning process and not only the final products) and ecological integration (similar emphasis on subject matter, learner and society where the first and most important goal of education is its ecological validity). This orientation focuses in the "development of individuals who function effectively as citizens of a single world and whose commitment to human futures goes beyond personal competence, local achievement, and national pride" (Jewett et al., 1995, p.28).

Ribeiro (1998) refers that curriculum development is a complex process involving four stages which relate and interact: curricular justification (theoretical framework that justify the curriculum; representing a draft stage), curricular planning (plans and programs development), curricular implementation (curriculum operationalization) and curricular evaluation (a continuous process accompanying all stages). These stages represent also the most important curricular body of knowledge or areas, if we do not consider the Evaluation as an independent discipline, a tendency that has emerged in the last decades of the XX century.

There are several ways of conceiving and designing a curriculum: adding new competences, merging content with pedagogy and maybe the most important, developing professional teachers. One of the ways to achieve quality in educational system is to strengthen the skills and the ability of teachers and professional development should create opportunities for teachers to increase their expectations for students. According to Patesan and Bumbuc (2010) among the most well-known and accepted models about teaching and learning in higher education, there is the John Bigg's 3P model of curriculum that emphasize three variables that are in constant

interaction: presage (students factors and context), process (an experience of coherent learning-focused activities) and product (outcomes).

However, from a historical perspective curriculum development has gone through several phases that we describe below.

Bobbit (1924; in Null, 2008) expands the concept of curriculum development previously mentioned as *curriculum advancement* and *curriculum making*, evidencing social dimension, arguing that curriculum development should take into account the social needs. This process, of trying to fill social needs, was an important contribution to American education (and further, all other countries education).

Tyler (1949) represents a benchmark in curriculum development. As a behavioral scientist, and one of Bobbitt's students, Tyler based on his tutor's project and expanded the curriculum development, which has been applied at K-12 and at higher education levels. In order to develop a curriculum, Tyler (1949) argues that teachers and school administrators should answer four questions: (1) Which objectives the school wants to achieve?; (2) Which experiences can be provided in order to achieve those objectives?; (3) How these experiences should be organized?; and (4) How can we determine whether the objectives are being achieved? He believed that when answering these questions, a curriculum would become effective.

Smith, Stanley and Shores (1950) boosting theoretical advances in this area and expanding the concept of Tyler's (1949) curriculum development have introduced subjects like science, technology, the role of values in curriculum development, sociological analysis. However, regardless of the major expansion and deepening of the theme, their approach resembles much that of Tyler's. One of the major criticisms to this approach is that it is mainly theoretical, whereas the practice does not become too visible.

Taba (1962) was also based on Tyler's work, but followed a more directed way, an evaluation-oriented way, taking the curriculum development as an open process, to address the problems of schools and providing concrete guidelines. According to this author, the curriculum development has several stages: (1) identification of educational needs; (2) definition of objectives; (3) selection of contents; (4) preparation of content;

(5) selection of learning experiences; (6) organization of learning experiences; and (7) determination of assessment methods of teaching. Taba (1962) sought to integrate theory and practice and intended to create a curriculum theory that unified the dichotomies that have plagued the curriculum, teaching and education in the last 50 years. She believed that objectives should emerge from the real world of schools and classrooms and not as prescriptions that teachers have to follow.

After Taba (1962) and yet within a systematic approach to curriculum Gagné and Brigs (1974) propose a set of steps to organize the education system: (1) analysis and identification of needs; (2) definition of objectives; (3) identification of means to meet the needs; (4) improvement of system components; (5) analysis of existing and required resources/constraints; (6) actions to modify the constraints; (7) selection or preparation of teaching material; (8) readjustment of assessment methods; (9) formative assessment and teacher training; (10) adjustments, reviews and reassessment; (11) summative evaluation; and (12) implementation of operating system. This perspective, as Taba's, has as its starting point the analysis of educational needs.

In the late 60s and early 70s, as well as the launch of Sputnik by the Soviet Union in 1957, American hegemony was undermined and scientific and technological competence and its reflection at curriculum were questioned (Null, 2008). To solve this problem the American government began to recruit specialists from universities in different scientific areas that had the responsibility to remake the science curriculum, with the goal of America to regain its hegemony and be able to compete on a global scale. Schwab (1969), a biologist and behaviorist, was one of those scientists who were responsible for carrying out this function. He was aware of the changes occurring in science and psychology, where behaviorism, which for many years was reflected in the curriculum, began to be criticized, and brought a humanistic approach to curriculum. However, when he went to the area of curriculum development, he found that it was stagnant and could even disappear, therefore requiring new methods, a new direction, because times had changed, new problems had arisen and the curriculum must follow social change and address problems and social needs. Based on Tyler's rationale, Schwab (1969) replaced the development process for the concept of deliberation,

arguing that the concept of development had originated theoretical reflections that were not advantageous for the field because this term could refer to something permanently unfinished. According to D'Hainaut (1980) the curriculum development involves three levels: (1) analysis of the purposes and objectives, (2) research on the methods and means of teaching and preparation of their instruments, (3) determination of the methods and means of assessment.

In what concerns curriculum development at the turn of the century, Apple (1990) focused in the concept of hidden curriculum and advocated policy changes in the future; Goodson (1993) appealed for a curriculum similar to Apple's, but focusing in social inequalities. Other researchers still stand up for a systematic curriculum development tradition, as it is the case of Tanner and Tanner (1980), who are based on the works of Tyler (1949), Smith et al. (1950) and Taba (1962).

2.3.3 Curriculum improvements and revisions.

Demographic, political, economic, and technological changes have an impact on the curriculum and universities should take into account these changes, rethinking the curriculum to meet bot the job market and student demands and, if needed, search assistance in understanding market perspectives (García & Ratcliff, 1997). Curricula change for several reasons but most importantly for outside pressures (new students, new faculty, new knowledge, new needs for citizens and employees). Each institution develops and shapes its own curriculum to address unmet needs in society (Hawthorne, 1997). The curriculum will not be changed unless society changes and gets a step ahead, but in another perspective, an improved curriculum can help move society forward, but above all it is important to remember that a curriculum is not helpful unless it meets the needs of the society. It becomes essential to have an updated curriculum that reflects the changes and the current paradigms (Patesan & Bumbuc, 2010).

For many years the dominant influence in the shaping of curricula was the knowledge of academics in different fields, however nowadays there is several external influences (ex: employers) and an increasing demand to adapt it to the world of work. Universities have a responsibility to adjust their educational offer to the world's

challenges, however, this is a responsibility that many universities and curricula are failing to meet (Barnett, 2000).

Whenever there are discussions about quality in education, people speak about curricula, reforms and new ways of evaluation. According to Barnett, Parry and Coate (2001) in order to change an undergraduate curriculum, it is necessary to shift from a traditional to an emerging curriculum that should be based on: knowing how, oral communication, transferable skills, action orientation, problem-solving, knowledge as product, information, issue-based, task-based, and experiential learning.

Undergraduate programs should be frequently revised because the curriculum is constantly changing in response to the external factors, forces and trends that shape it and give it life and meaning (García & Ratcliff, 1997). Curriculum assessment allows to gather information and to analyze it in order to improve student learning. The curriculum should be assessed to identify aspects that need to change, or that are not working; to assess the effectiveness of changes that already have been made; to demonstrate the effectiveness of the current program; and to meet review requirements or satisfy professional accreditations. To accomplish this task we can use several methods such as: opinion gathering (survey, focus group, interviews, and department meetings), testing (written, demonstration, control group...), content analysis (student and faculty journals, concept mapping...), expert advice (tours, external reviewers...), archival data (course outlines, course evaluations, past curricular reports (Wolf, Hill, & Evers, 2006).

Teodoro and Estrela (2010) highlight the setting of an agenda structured at a global level for education in which the ability of supranational and transnational institutional forces to cross or go beyond national borders, and the configuration of relationships between nations is implicit. It is advocated that education and curriculum policies should be understood as a product of multiple influences and interdependencies and that they result from a process that reveals the interests, values, principles, and rules that prevail at any given time. The global organizations advocate a set of priorities for education to improve a country's economic growth, however in Portugal there are no discussions of the curriculum concerning these organizations or

its contents. In fact, there has been no discussion of knowledge organization or learning, only a discussion of teaching techniques and school organization. There has been no change in how the curriculum is seen, and in general new curricula end up by being just an integration of new concepts and conceptualizations in the old curriculum concepts and paradigms (Teodoro & Estrela, 2010).

2.3.4 The concept of competence.

The concept of competence is multidimensional, and specific use of the concept depends on the context. There are various approaches to and definitions of this concept, although it is not our purpose to do an exhaustive inventory, but to characterize briefly the concept of competence and its relation with the Bologna process, focusing further in the concept of entrepreneurial competences.

Spencer and Spencer (1993, p. 4) define competences as the:

> Motives, traits, self-concepts, attitudes or values, content knowledge, or cognitive or behavioral skills – any individual characteristic that can be measured or counted reliably and that can be shown to differentiate significantly between superior and average performers, or between effective and ineffective performers.

Competences are thus the characteristics of a person that are related to superior performance in a job and can be common across situations (Spencer & Spencer, 1993). For Man, Lau and Chan (2002) competences can only be demonstrated by a person's behavior and actions. According to Perrenoud (2008), competence refers to the ability to mobilize/transfer a set of cognitive resources (knowledge, skills, information) to solve efficiently different issues, conducting to professional and personal development. The transfer and mobilization of knowledge and capabilities is a lengthy process, which requires an active pedagogy and different methodologies, such as problem solving, project development and challenges, with appropriate situations that allow students to practice their cognitive resources. It is important that teachers, besides their specializations and specific knowledge about their subjects, are able to create these situations, to help students achieve this challenge.

Westera (2001) refers that competences are needed to engage situations involving multidimensional problems in which no straightforward approaches to problem solving are appropriate. This author differentiates two denotations of *competences* in education: a theoretical (cognitive structure that facilitates specific behaviors) and an operational perspective (knowledge, skills, attitudes, metacognition and strategic thinking, and presupposes conscious and intentional decision making that represent the ability to cope with complex and unpredictable situations).

2.3.5 Competences and the Bologna process.

The Bologna process, dating from 1999, had the main purpose of increasing the employability, the mobility of students and academic staff, the international competitiveness of the European higher education system, through the adoption of a system of comparable degrees, essentially based on two main cycles: undergraduate and graduate, the establishment of a system of credits and the promotion of European co-operation in quality assurance (The European Higher Education Area, 2010).

The Bologna process introduced a paradigm shift related with learning and teaching models and tried to reduce the gap between society, employer's needs and curricula that still exists. In Europe, this process has defined a set of steps to build a European area of higher education globally harmonized, where training and curricula organized by competences are a very important aspect, which led to the reorganization of the educational process from a new paradigm. Designing Bologna programs taking into account the needs of the economy is a quality assurance in higher education and study programs should be closely connected with the labor market. Despite the fact that, in many institutions, theoretical appeals and guidelines have not been operationalized (remaining just in theoretical stage), the way people think and act about curriculum has changed and new ideas emerge, such as the learning process organized by competences and learning outcomes (The European Higher Education Area, 2010).

TUNING Educational Structures in Europe started in 2000 as a project with the purpose to link the political objectives of the Bologna Process and the Lisbon Strategy to the higher educational sector. The underlying idea of this project is that European

universities should look for points of reference, convergence and commonly understand the way they organize educational structures and content, allowing the comparability of curricula in terms of structures, programs and actual teaching. It developed a common methodology to expand the European framework of qualifications in higher education, stressing the importance of generic competences or transferable skills for the preparation of students for their future roles in society (González & Wagenaar, 2008). It differentiates competences from learning outcomes and defines these concepts. Learning outcomes are statements of what a learner is expected to know, understand and/or be able to demonstrate and they can refer to a single course unit or module or else to a period of studies, for example, a first or a second cycle program, allowing for much more flexibility than is the case in more traditionally designed study programs, because they show that different pathways can lead to comparable outcomes. On the other hand, competences refer to a dynamic combination of knowledge, understanding, skills and abilities, representing thereby the object of educational programs. They are not exclusive of one course or subject, instead they are be formed by various units. Three types of generic competences are distinguished, namely: instrumental competences (cognitive abilities, methodological abilities, technological abilities and linguistic abilities), interpersonal competences (individual abilities like social skills), systemic competences (abilities and skills concerning whole). In this study competences are reference points for curriculum development, allowing flexibility and autonomy in the curriculum development process.

In what concerns mobility and lifelong learning instruments, the European Commission developed several initiatives to help make qualifications, experiences and skills better appreciated and easier to recognize, in order to increase mobility, namely: the European Framework of Key Competences, The European Qualification Framework for lifelong learning, the European Quality Assurance Reference framework for Vocational Education and Training, The European Credit Transfer and Accumulation System, the Diploma Supplement, the European Credit system for Vocational Education and Training, Europass, among others (European Commission, 2013).

The European Framework of Key Competences for lifelong learning was developed in 2006 and identifies the fundamental skills and knowledge that people need in order to achieve employment and personal fulfillment, leading to successful lives in a changing world. Education systems should support the development of these competences, which should be acquired by young people and adults throughout their lives, through a process of updating skills.

The Reference Framework sets out eight key competences, some in *traditional* subjects, and others in other fields: (a) Communication in the mother tongue; (b) Communication in foreign languages; (c) Mathematical competence and basic competences in science and technology; (d) Digital competence; (e) Learning to learn; (f) Social and civic competences; (g) Sense of initiative and entrepreneurship; (h) Cultural awareness and expression (European Commission, 2006).

In what concerns the sense of initiative and entrepreneurship, European Commission (2006, p.17) defines this competence as:

> An individual's ability to turn ideas into action. It includes creativity, innovation and risk-taking, as well as the ability to plan and manage projects in order to achieve objectives. This supports individuals, not only in their everyday lives at home and in society, but also in the workplace in being aware of the context of their work and being able to seize opportunities, and is a foundation for more specific skills and knowledge needed by those establishing or contributing to social or commercial activity. This should include awareness of ethical values and promote good governance.

European Commission (2006) still characterizes the knowledge, skills and entrepreneurial attitude related to this competence. The knowledge includes the ability to identify business opportunities; the essential skills relate to proactive project management (e.g. the ability to plan, organize, manage, lead, communicate), the ability to work both as an individual and in teams and, to assess and take risks; and the entrepreneurial attitude is characterized by initiative, pro-activity, independence and innovation, it also includes motivation and determination to meet objectives. In this sense there are some principles that entrepreneurs should consider, such as: autonomy, flexibility, innovation, change, participation and cooperation.

In spite of the main purposes of the Bologna Agreement, several institutions in Portugal opted for highlighting the change from the teaching paradigm to the learning paradigm. The implementation of Bologna in Portugal has been achieved in name only, corresponding to implementation in *form* rather than in *substance*, probably due to the fast implementation that occurred in most institutions (Veiga & Amaral, 2009).

2.3.6 Entrepreneurial competences.

Although the concept of entrepreneurial competences is frequently used by government agencies and others, the concept, its measurement and its relationship to entrepreneurial performance and business success need further rigorous research and development in practice (Mitchelmore & Rowley, 2010).

According to Ratten (2012), competences become entrepreneurial when they are innovative. Fiet (2000, p. 107) defines this concept as "combination of skills, knowledge and resources that distinguish an entrepreneur from his or her competitors". Mitchelmore and Rowley (2010, p.93) refer to entrepreneurial competences as "a specific group of competences relevant to the exercise of successful entrepreneurship". For Lans, Biemans, Mulder and Verstegen (2010, p. 148) it "refers to new pathways for achieving innovation-related business targets on the one hand and the set ok knowledge, skills, and attitudes of owner-managers to identify and pursue these opportunities on the on the other hand". An important issue is the fact that competences can be learned and developed and the link between this concept and business performance depends on context.

> Entrepreneurial competences are considered a higher-level characteristic encompassing personality traits, skills and knowledge, and therefore can be seen as the total ability of the entrepreneur to perform a job role successfully. The main advantage of using this approach is that it offers us a way to investigate entrepreneurial characteristics that have long-term effects and closer links to organizational performance (Man, Lau and Chan, 2002, p. 124).

This author still differentiates six areas of entrepreneurial competences: opportunity, relationship, conceptual, organizing, strategic, and commitment

competences. Lans, Bergevoet, Mulder and Van Woerkum (2005) described each one of these competences: opportunity (competences related to recognizing and developing market opportunities through various means), relationship (competences related to person-to-person or individual-to-group based interactions), conceptual (competences related to different conceptual abilities which are reflected in the behavior of the entrepreneur), organizing (competences related to the organization of different internal, external, human, physical, financial and technological resources), strategic (competences related to setting, evaluating and implementing the strategies of the firm) and, commitment competences (competences that drive the entrepreneur to move ahead with the business). They also emphasizes that some competences are changeable and learnable, possible to be changed in a relatively short-term, which enables the possibility of an educational intervention.

Johannisson (1991) presents a taxonomic approach for entrepreneurial competences differentiating different competences:

- *know-why*: attitudes, values, motives– usually innate;
- *know-how*: vocational skills;
- *know-who*: social skills/network capability- developed by practice;
- *know-when*: insight/experience/intuition- crucial to opportunity management;
- *know-what*: encyclopedic knowledge/institutional facts.

Izquierdo and Buyens (2008) argue that competence models are relevant in the entrepreneurship domain as they provide the framework for developing adequate contents and approaches for educational interventions. These authors organized an educational program based on competences and following a constructivist approach, to promote entrepreneurial competences. This program developed by Izquierdo and Buyens (2008) presented positive outcomes, confirming the initial hypothesis that constructivist perspective is very appropriate to develop entrepreneurial competences. Several other authors also argue that entrepreneurship education models should follow a constructivist approach (Fiet, 2000b; Honig, 2004; Lobler, 2006). In the same line Béchard and Grégoire (2005), also highlight the importance to adopt a teaching model

focusing on the development of competences, based on the constructivist theory of Piaget and the socio-historical theory of Vygotsky. Gibb (2005) also presents an alternative model to teach entrepreneurship through the development of entrepreneurial behaviors (opportunity seeking and grasping, taking initiatives, solving problems creatively, networking effectively...), entrepreneurial attributes (perseverance, action orientation, determination, creativity, self-confidence...) and entrepreneurial skills (persuading, negotiating, selling, strategic thinking...).

Several institutions and authors recognize the importance to change higher education system and policies, through a new curriculum organized by competences and learning outcomes. In improved curricula new competences emerge, and entrepreneurial competences need to be promoted more actively and efficiently in all fields.

In this work the concept of entrepreneurial competences is in line with the definitions presented by Man et al. (2002) and, Lans et al. (2010), encompassing personality traits, skills and knowledge that allow an entrepreneur to perform a task successfully.

2.3.7 Summary.

A curriculum is a social construct undergoing continuous revisions and modifications, which encompass different matter programs, goals definition, learning and teaching activities, program contents and evaluation forms. Higher education is at the pinnacle of education and largely determines its quality. Any changes in the society tend to be reflected in the curricula of higher education institutions, probably because they correspond to the top of formal education and the last step before students enter the world of work. Curricula should not therefore be isolated from the problems and needs of the society and from its role to prepare specialists who will be responsible for future progress of the nation (Patesan & Bumbuc, 2010).

In what concerns the process of curriculum development, different theories and approaches are presented and a characterization of its evolution is made. Through the characterization of the curriculum, the social dimension is well illustrated and it is an

important issue that grounds part of the present study. Entrepreneurship education actually emerges as a social and economic need that should be promoted through teaching, at all ages and fields, through the introduction of entrepreneurial competences, and the curriculum emerges as the perfect tool to accomplish this goal.

2.4 Entrepreneurship and the curriculum of Sport Sciences

In this third part we characterize the field of study covered in this research - Sport Sciences - emphasizing its multidisciplinary nature and dimensions. Then we focus on the concept of sports entrepreneurship and highlight the importance of studying entrepreneurship through the perspective of sports. Finally, the process of development of sport sciences curriculum is characterized, as well as the different steps that must be accomplished in order to provide an efficient curriculum that may fulfill social needs.

2.4.1 Sport sciences: a multifaceted and multidisciplinary field.

Sport is a growing social and economic phenomenon and beyond aiming to improve health, sport has an educational dimension, fulfilling a social, cultural and recreational function (European Commission, 2007). Sport is a dynamic and fast growing sector, which macroeconomic impact is being underestimated and that can contribute to the Lisbon objectives in what concerns growth and job creation. It can also contribute to local development and regional, urban regeneration and rural development. Sport has synergies with tourism and can stimulate the upgrading of infrastructure and the emergence of new partnerships for the financing of sports facilities and leisure (European Commission, 2007).

Sport Sciences address the learning of the structure and bioenergetic processes, mechanical and informational, associated with human movement. Such as Neumaier (2003) contends, Sport Sciences are a multifaceted and multidisciplinary field where different scientific perspectives and research questions emerge. This author refers that the complexity of sport is reflected in the multidisciplinary structure of research facilities at universities in which Sport Sciences is the subject of research and teaching.

2.4.2 Sports entrepreneurship.

Entrepreneurship is an integral part of any professional industry (Ratten, 2011) and, as a complex social phenomenon, is studied from different perspectives, as Gartner et al., (1992) suggested. Although there is a growing trend to include other areas, most studies still focus in economics/business and engineering. In what concerns undergraduate education, a more academically oriented entrepreneurship curriculum, directed to students who are less likely to possess industrial experience and contacts may be appropriate, particularly in fields other than business (Vesper & McMullan, 1988). Nowadays it is argued that these students also benefit from entrepreneurship education because in many instances they get ideas but they do not have the management expertise needed to develop and implement them in the market consistently and effectively (Hynes, 1996; European Commission, 2008).

The growth and diversity of the hospitality, leisure, tourism and sports industries along with increases in consumer expectations of their leisure time and experiences have placed greater demands on providers and graduates with entrepreneurial abilities, good technical, business and interpersonal skills are increasingly being sought by employers (Ball, 2001). Entrepreneurship has been studied from a variety of disciplines and Sport Sciences is no exception.

Although entrepreneurship has little recognition in the sports context, namely in the sports management literature (Ratten, 2012), Hardy (1997) highlights the importance of analyzing sports from an entrepreneurial perspective and contends that research should follow this trend. In the same line, Ratten (2012) refers that an entrepreneurial culture is important in the support and fostering of entrepreneurial sport opportunities. Both entrepreneurship and sports aspire to boost economic and regional development and share several characteristics, such as innovation, pro-activeness, risk taking, initiative and opportunity seeking.

Recently, scholars have called for the integration of entrepreneurship and sports' management disciplines (Ratten, 2011) because sports' entrepreneurs are increasing and start recognizing that they need to be more strategic and innovative in their actions

in order to capitalize on opportunities that exist in challenging economic conditions. They are often involved in social and community activities that create social value rather than just personal wealth (Ratten, 2012).

Sports' entrepreneurship is a multifaceted issue that requires a multidisciplinary approach and focus in sports-related exploration, sport venture creation and sports orientated (Ratten, 2012). It refers to innovative activities within the context of sports enhanced with a proactive and risk taking quality (Ratten, 2011) and it is valuable for both established and new organizations, helping to position them better in the market and to sustain a competitive advantage, offering innovative ways to help resolve social and economic problems (Ratten, 2012). Sports organizations are commercial entities that need to be proactive about their growth and survival (Ratten, 2012) and "have a competitive advantage that confers a social or economic value that sports entrepreneurs can nurture and create" (Ratten, 2012, p.12).

Ratten (2011) refer that sports' entrepreneurship concern people or organizations related with sport that innovate in business procedures, creating something different from what has been done before. This definition is based on an interdisciplinary perspective that highlights how sport management often encompasses areas of entrepreneurial studies and vice versa.

As Ratten (2012) mentions, sports' entrepreneurs identify opportunities based on their background and experience and sometimes the amount and type of information a sports' entrepreneur possesses will enable him to make a decision about an opportunity. Sports' entrepreneurs who are alert to new opportunities can then exercise creativity and innovation in facilitating beneficial outcomes. As sports entrepreneurship is a newly emerging field, an important issue is its definition, where innovation is the focus of this process. Sports' entrepreneurship in this work is conceptualized as innovative activities in the sports context developed by people or organizations.

There is a dearth of research examining sport sciences and entrepreneurship and according to Ratten (2012) few studies have empirically developed and tested a sport entrepreneurship construct and little conceptual or empirical research has been devoted to understanding the conditions that produce sports' entrepreneurship.

However some studies about this complementarity have been discussed in previous research, focusing on different issues:

- development of human capital and competitive sports (Krueger & Neergaard, 2012);
- entrepreneurial attitudes and sport franchise: increase net income (Legg & Gough, 2012);
- entrepreneurial strategies and brand management theories (Miloch, Lee, Kraft & Ratten, 2012);
- relationship between exercise and the attainment of personal and professional goals for entrepreneurs (Goldsby, Kuratko & Bishop, 2005);
- sport mega-events as promoters of urban entrepreneurship (Hall, 2006) and entrepreneurial systems (Spilling, 1996);
- *sport entrepreneurship* field and suggestions for further research (Ratten, 2012).

Ratten (2011) has studied the relation between *Sport Management* and entrepreneurship and argues that it can be considered an entrepreneurial process because of the characteristics they have in common and also proposes sport-based entrepreneurship as a category of entrepreneurship that fosters economic development in the Sport Management field. Through sport many new ideas can arise and allow entrepreneurship to take place (Ratten, 2011). Besides Sport Management, we can include in the Sport Sciences field, Sport Coaching, Exercise and Health and Physical Education. In each one of these, entrepreneurial competences can emerge and sport sciences students can benefit of this interaction, becoming better professionals and more aware of their opportunities at a time when employability is increasingly difficult.

Ratten (2012) highlights the importance of this concept to the development of new sport ventures arguing that the ability of a sport entrepreneur to perform a task successfully is an important aspect of entrepreneurial competence. Entrepreneurial competences are required to help a sport entrepreneur with the role in changing stages and a major driver for understanding entrepreneurial competences is their relevance to business performance and economic growth with the sport sector.

2.4.3 Sport sciences curriculum.

As aforementioned, the Bologna process introduced a paradigm shift and Sport Sciences field accompanied this evolution through the development of the Six-Step Model (AEHESIS, 2006). On October 2003, the ERASMUS Thematic Network Project AEHESIS started fulfilling the task *Aligning a European Higher Education Structure In Sport Science* focusing on the sectors *Physical Education Health & Fitness, Sport Management and Sport Coaching* and since then, sport education experts from 28 European countries, held various meetings and conferences, and exchanged numerous working papers in order to produce new collective standards and references for curricula in the sport sector – always bearing in mind the Bologna Declaration, the Lisbon Strategy objectives, the related Education & Training Agenda 2010 and the European Qualification Framework.

The project was coordinated by the Institute of European Sport Development & Leisure Studies at the German Sport University Cologne, on behalf of the European Network of Sport Science, Education & Employment. To lead the project, a management group, an expert group and four research groups in the identified key areas in sport education, namely the sectors Physical Education, Sport Management, Health & Fitness and Sport Coaching, were implemented. One of the main outputs achieved till the end of the third year (30 September 2006) was the methodological concept of the project, which is the Six-Step-Model, reflecting the key principles of the Bologna process based on the Tuning Methodology.

Trying to find a methodological approach coherent with the logic of competences used in civil society, the European policies in the area of education and higher education as well as with the guidelines defined by the Bologna Declaration, the AEHESIS thematic network followed the marks of the Tuning project, and, on that basis, developed the Six-Step Model (Table 2.3), that was considered to close the gap between social needs in relation to the job market and the related *academic curricula*, allowing a common approach. However it should not be used as an object to imitate or to reproduce, but as a framework or set of categories, allowing development and interpretation.

Table 2.3. Six-Step Model (AEHESIS, 2006, p. 5)

Step I	Professional Area Action: Definition of the area
Step II	Standard Occupations Action: Definition of the three major occupations
Step III	Activities Action: Definition of four/five activities for these occupations
Step IV	Competences Action: Definition of corresponding competences for each activity listed before
Step V	Learning Outcomes Action: Specification of learning outcomes related to the agreed competences for the three relevant occupations
Step VI	Curriculum Model Action: Production of curriculum model for each occupation

According to AEHESIS (2006) the following standard occupations for the different areas were identified in Table 2.4.

Table 2.4. Standard occupations in Sport Sciences (adapted from AEHESIS, 2006)

Health & Fitness	**Physical Education**	**Sport Coaching**	**Sport Management**
Advanced Gym Instructor/ Personal Trainer Health related Exercise Instructor/ Specialist Public Health Promoter Health and Fitness Manager	There is only one standard occupation with 3 major functions: Teaching Teaching PE including extra-curricular sport PE with emphasis on delivery of a broad and balanced curriculum fostering knowledge, skill and understanding Teaching PE including health and lifestyle	Two main standard occupations within the professional area have been identified, each with two sub-components: a) Coach of participation-oriented sportsperson: • Coach of beginners (child, junior, adult) • Coach of participation oriented sportsperson (child, junior, adult) b) Coach of performance-oriented athletes: • Coach of talent identified/performanc e athletes (child, junior, adult) • Coach of full-time/high performance athletes	Local Sport Manager or director in a city or municipality Sport club Manager or Director Manager or Director in a National Sport Federation Manager in a Fitness Club

As regards avenues for further research, four challenges are expected to be faced: to develop initiatives regarding building a *knowledge society* in terms of competences in

the sport sector; to rebuild training and education activities progressively in regards to the European Commission's Life Long Learning Programs; to apply the Six-Step Model in all sport sectors, in particular based on a systematic mapping of standard occupations to the European Qualification Framework in sport and their related tasks, functions and competences (AEHESIS, 2006).

2.4.4 Summary.

Sport is a growing social and economic phenomenon, addressing different dimensions and functions in the society. We can include in the Sport Sciences the field Sport Management, Sport Coaching, Exercise and Health and Physical Education and within each one of these, entrepreneurship can occur. In this chapter the importance of analyzing sports from an entrepreneurial perspective is emphasized, and the concept of sports entrepreneurship is presented, as well as its main characteristics, common to entrepreneurship, such as innovation, pro-activeness, risk taking, initiative and opportunity seeking. The number of entrepreneurs in the sports field is increasing and they can play an important role in the economy. This role can be promoted in the higher education curriculum through the Six-Step-Model, grounded in the paradigm shift introduced by Bologna.

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Conceptual Study 1

Entrepreneurship education literature in the 2000s

Abstract

There seems to be a gap in the literature on entrepreneurship education that prevents it from making stronger contributions towards practice. This study addresses this issue by reviewing the state of the art about entrepreneurship education through the analysis of the contributions made over the 2000s. Articles centered on the development of methods, programs, and frameworks often reflect experiences that are context-specific; empirical validation, when offered, is usually limited to those specific contexts. Theory-building and theory-testing are rooted in single paradigms, limiting the generation of more complete and eclectic knowledge. Entrepreneurship education seems to be more focused on what works in the classroom than on developing cutting edge theoretical contributions. Several lines of inquiry are proposed in order to push the boundaries of existing paradigms and trends and improving practice through theory-building.

Keywords:

Entrepreneurship education; theory-building; theory-testing; taxonomy of contributions.

3.1 Introduction

Entrepreneurship education has progressed in great strides and has spread widely around the world in recent decades. This proliferation has been supplemented by increasing diversity in pedagogic approaches and an increasing number of courses addressing special subjects within the entrepreneurial process (Vesper & Gartner, 1997; Katz, 2003). Entrepreneurship is now a well-established academic discipline (Gartner & Vesper, 1994; Fiet, 2000b) and a legitimate course of study (Vesper & Gartner 1997; Katz, 2003). The booming pursuit of entrepreneurship education over the last few decades has attracted a growing interest in entrepreneurship education research, leading to an increasingly rich field of study.

Theory-building and its role in the advance of entrepreneurship education has been a longstanding concern in entrepreneurship education research, as emphasized by several authors (e.g. Sexton& Bowman, 1984; Hills, 1988; Katz, 2003). Theory-building is the process by which theoretical contributions are generated, tested and refined (Gioia & Pitre, 1990). Whetten (1989) highlights the importance of theory in challenging and advancing scientific knowledge and guiding research, and contends that "the theory development process and criteria for judging theoretical contributions need to be broadly understood and accepted so that editors and contributors can communicate effectively" (Whetten, 1989, p. 495). Over the years there have been a number of efforts to communicate the ingredients for a good theoretical contribution in the field of management, and different frameworks and writings have been put forward. Significant contributions include: Whetten (1989); Van de Ven (1989); Eisenhardt (1989); Gioia and Pitre (1990); Weick (1995); Kilduff (2006); Colquitt and Zapata-Phelan (2007); Rindova (2008); and Corley and Gioia (2011).

Ireland, Reutzel and Webb (2005), claim that, in general, entrepreneurship research is characterized by low paradigm development. In turn, Busenitz et al. (2003, p.237), referring to research into multiple fields in entrepreneurship, conclude that "no powerful unifying paradigm exists, nor do multiple coherent points of view." Weick (1995) argues that in low paradigm fields of research it is sometimes difficult to build theory and, most important, to discern whether the work produced is theory. However, authors such as Kuhn (1970), and Burrel and Morgan (1979) emphasize the importance of using multiple paradigms to analyze the organizational phenomenon.

Recent works have analyzed trends in theory-building in management sciences and proposed different frameworks of analysis. For instance, Colquitt and Zapata-Phelan (2007) look at articles published in the Academy of Management Journal (AMJ), while Corley and Gioia (2011) analyze literature from the Academy of Management Review (AMR). The present study applies those frameworks to entrepreneurship education research and extends the analysis to a much wider range of journals. While many articles about entrepreneurship education reviewed here cut across different teaching levels,

the main concern is to focus on the context of higher education, where most research in the field is centered (Gorman, Hanlon & King, 1997).

This survey shows that theoretical contributions on entrepreneurship education have been increasing and improving. However, there is still considerable scope for improvement, in particular through articles that expand knowledge by making new theoretical propositions and testing these propositions in new experimental settings. Theory-building and theory-testing are still rooted in single paradigms, limiting the generation of more complete, eclectic knowledge. Entrepreneurship education seems to be more focused on what works in the classroom, than developing cutting edge theoretical contributions. Several lines of inquiry are proposed in order to push the boundaries of existing paradigms and trends and improving practice through theory-building and testing.

The study is organized as follows. First the parameters that guide the analysis are briefly discussed; second, the methodological approach is presented; third, a typology of contributions is established; fourth, the content of theoretical contributions is analyzed; and finally, results are discussed and conclusions are drawn, as well as the implications and limitations of the study are discussed, suggesting avenues for future research.

3.2 Elements for an examination of contributions

Although there are many definitions of the concept of theoretical contribution, there is no universal definition. According to Corley and Gioia (2011, p.15), “the idea of contribution rests largely on the ability to provide original insight into a phenomenon by advancing knowledge in a way that is deemed to have utility or usefulness for some purpose.” This study builds upon Rindova’s (2008, p.300) definition:

> What makes a contribution novel is not that no one in the field ever thought about a given idea but that the idea is articulated, organized, and connected in a way that suggests new directions for researchers who, hopefully, are already thinking about it.

In order to analyze and assess theoretical contributions, this study produces a taxonomy built upon contributions and frameworks published in the AMR and AMJ, which are among management's leading conceptual journals.

3.2.1 Taxonomy.

Colquitt and Zapata-Phelan (2007) develop a taxonomy that is applied to the theoretical contribution of empirical articles. This taxonomy is based on two dimensions – theory-building and theory-testing – and encompasses five categories: *reporters, testers, qualifiers, builders,* and *expanders*

Reporters have low levels of theory-building and theory-testing, and are usually related to replications of conflicting findings in past research. Testers have high levels of theory-testing and low levels of theory-building, and test existing theory in different contexts or samples. Qualifiers have moderate levels of theory-testing and theory-building, and qualify relationships or processes established in past research. Builders have high levels of theory-building and low levels of theory-testing, and include inductive studies that develop new constructs, relationships or processes. Builders can also include hypothetical-deductive studies that analyze a relationship that has not been analyzed before. Expanders have high levels of theory-building and theory-testing, focusing on constructs, relationships or processes that have not yet been theorized, while also testing existing theory. Builders, testers, and expanders make greater theoretical contributions when compared to reporters and qualifiers, whose theoretical contributions are lower.

Colquitt and Zapata-Phelan (2007) use this taxonomy to analyze trends in the theoretical contributions of AMJ articles over the past five decades finding an increase in theory-building and theory-testing in management research. Reporters have been replaced by qualifiers and expanders, which have become the most impactful articles. Builders have also increased, outpacing testers. It is important to examine entrepreneurship education literature in order to ascertain what types of articles (with regard to the weight of theory-building) have been published most frequently. While there may be a feeling that most works on entrepreneurship education are merely

reporters, an examination of the recent literature might provide a different insight. An emergence of builders without a concomitant increase in testers can cause a 'construct proliferation' which is not very desirable in a low paradigm field with an already fragmented literature (Pfeffer, 1993).

3.2.2 Assessment.

Paradigms.

According to Kuhn (1970), and Burrel and Morgan (1979) analysis based on only one paradigm or one way of understanding the organizational phenomenon tends to produce incomplete knowledge, especially when referring to the multifaceted nature of organizational studies and realities. Burrel and Morgan (1979) distinguish four paradigms: interpretivist and radical humanist, related to a subjective approach to reality, and radical structuralist and functionalist, related to an objective approach to reality. Gioia and Pitre (1990), applied these intellectual foundations to theory-building issue, arguing that there are different approaches to theory-building founded on different paradigms.

The interpretivist paradigm describes and explains, in order to diagnose and understand, and theory-building typically consists of substantively describing emerging concepts and relationships and showing how it all fits together. The radical humanist paradigm describes and critiques in order to revise and change the perception of reality, and theory-building usually consists of writing up dialectical analyses and showing how the level of consciousness should change.

The radical structuralist paradigm aims to understand, explain, criticize, and actively revise the structure of reality. Under this paradigm, theory-building usually consists of writing up rhetorical analyses and showing how established practice should change. In the functionalist paradigm, the goal is to search for regularities and test them in order to predict and control reality, and theory-building usually consists of writing up results and propositions, describing the regularities observed, testing these propositions, and showing how the theory is refined, supported or disconfirmed.

Most theory development is based on functionalism. However, this paradigm should not be seen as the best suited, universal approach for theory-building. Also, while theoretical perspectives based on a single paradigm should be recognized as original, they jeopardize an eclectic and holistic vision of reality. Gioia and Pitre (1990) propose a metaparadigm perspective of theory-building in which shared areas between paradigms (transition zones) exist allowing for diverse paradigmatic views, regardless of whether the viewer is typically rooted in the assumptions of a particular paradigm.

Building Blocks.

Whetten's (1989) contribution to theory development remains influential and provides a standard for assessment of the consistency of theoretical contributions. Based on previous contributions to theory development (e.g. Dubin, 1969), this author suggests that good theoretical contributions are based on four building blocks: *what* refers to the identification of factors, variables, constructs and concepts that must be taken into account in the explanation of the phenomenon, while respecting the criteria of comprehensiveness and parsimony; *how* refers to an explanation of the way in which the previous factors are related, and the development of patterns of causality; *why* refers to the description of the underlying dynamics beyond the proposed factors and causal relationships; and when refers to the temporal and contextual factors that condition the propositions of the theoretical model and represent the range of the theory.

What, how and *when* describe and constitute the domain or subject of theory, providing a framework for interpreting patterns or discrepancies. *Why* embodies the theory's assumptions and explanations, representing the elements of the theory subject to empirical testing, and specifying the implications for research of a theoretical argument. Assessment of current literature on entrepreneurship education requires an analysis of whether the research has responded to the challenge of *why*, i.e. whether it has produced new insights with implications for further research that can be subjected to empirical examination across a variety of settings.

3.3 Research method

3.3.1 Sources and coverage.

This analysis focuses on academic articles published over the period 2000-2011 on the subject of entrepreneurship education in higher education. This time period is particularly relevant since the last decade has seen significant developments in entrepreneurship education with the creation of a large number of programs inside and outside business schools, plus a variety of courses covering specific subjects within entrepreneurship (such as, for instance, opportunity recognition, business models, and entrepreneurial finance). Also, the last impactful reviews of the subject were carried out in the late 1990s (for instance: Gorman et al., 1997, and Fiet's, 2000a, 2000b).

Articles are drawn from peer-reviewed journals in the subject categories of Business, Management, Education and Educational Research. Most of these journals are listed in the ISI Web of Knowledge. The selection of articles was carried out with the objective of covering the widest possible range of journals in the fields of Management and Education integrating theory and empirical articles about entrepreneurship education (methodologies, theories, contents, frameworks and evaluation of programs/subjects). Interviews, reports, introductions to special issues, and presentations were excluded.

Table 3.1outlines the stages pursued in the review methodology. Two searches were conducted: the first search was carried out on the websites of the most prestigious journals in each of the areas listed above, according to ISI impact factor; the second search covered business and academic databases (such as EBSCO), thereby adding more journals to the initial sample.

Following the procedure adopted by Busenitz et al. (2003), Coviello and Jones (2004) and Ireland et al. (2005), the searches were based on keywords associated with entrepreneurship education in the article title or abstract. The keywords were: *entrepreneurship education; educating entrepreneurship; teaching entrepreneurship; entrepreneurial university; entrepreneurship faculty; academic entrepreneurship; university entrepreneurship; enterprise education; and entrepreneurialism.*

Table 3.1. Review methodology

Stage	Description
	Selection process
	1st Search
1	In the ISI Web of Knowledge (Journal of Citation Reports 2010 – Social Sciences Edition) list of journals, the following subject categories (journal type) were selected: Education and Educational Research; Management; and Business.
2	Journals were also selected that were not indexed on ISI Web of Knowledge, but included relevant articles about the topic, such as: *Higher Education in Europe*, *Teaching in Higher Education*, *Journal of Enterprising Culture*, *International Journal of Entrepreneurship Education*.
3	A search was conducted for articles that met four criteria: (1) peer review; (2) use of one or more of the following keywords in the title or abstract: *entrepreneurship education; educating entrepreneurship; teaching entrepreneurship; entrepreneurial university; entrepreneurship faculty; academic entrepreneurship; university entrepreneurship; enterprise education; and entrepreneurialism;* (3) publication between 2000 and 2011, inclusive; (4) focus on entrepreneurship education methodologies, theories, contents, frameworks and evaluation of programs/subjects.
	2nd Search
4	Search in business and academic databases (such as EBSCO) for articles integrating theory about entrepreneurship education, using the above mentioned keywords.
	Data analysis
5	The data were 'cleaned' by excluding interviews, book reviews, editorial notes reports, introductions to special issues, and presentations. Articles that do not look at entrepreneurship education per se (such as works focusing on university administration and technology commercialization) were also excluded. The searches resulted in a set of 152 articles that met the selection criteria.
6	Articles were then read and analyzed. A total of 92 studies were dropped from further analysis since they did not meet the criteria described in (3), 60 articles remaining in the final set.
7	A first database of all relevant articles was created and additional information such as the article title, its author(s) details, the journal, the year of publication and an overview of the article were recorded.
8	After a content analysis of the articles, a second database was created and articles were coded according to: purpose, sample/data used, data analysis/procedures, findings, consistency of the theoretical framework and participation in the programs (mandatory vs. elective).
9	All the articles of the database were reviewed and coded by the authors according to the taxonomy created, on two separate occasions, with four-month gap between reviews. After an article was coded the second time, the coding was compared to its original coding. In over 90 per cent of cases, codings were the same; differences were due to more consistent application of selection criteria. In a meeting, the coding was compared and discrepancies were discussed in order to reach a consensus.

Examples of articles that were excluded from the review because they did not focus on entrepreneurship education per se (for instance, works focusing on university administration and technology commercialization) include Shane (2004) on university patenting, and Powers (2004) on technology transfer, among others.

Table 3.2. Distribution of articles per peer-reviewed journals

Subject Category	Journal Name (abbreviation)	Nr.Articles
Business and Management	Entrepreneurship & Regional Development (ERD)	2
	Entrepreneurship Theory & Practice (ETP)	1
	European Economic Review (EER)	1
	International Entrepreneurship Management Journal (IEMJ)	9
	International Journal of Business and Globalization (IJBG)	1
	International Journal of Entrepreneurship and Small Business (IJESB)	1
	International Journal of Entrepreneurship Education (IJEE)	1
	International Review on Public and Nonprofit Marketing (IRPNM)	1
	International Small Business Journal (ISBJ)	1
	Journal of Business Venturing (JBV)	4
	Journal of Economic Behavior & Organization (JEBO)	1
	Journal of Enterprising Culture (JEC)	2
	Journal of Small Business and Enterprise Development (JSBED)	1
	Journal of Small Business Management (JSBM)	1
	Research in Business and Economics Journal (RBEJ)	1
	Research Policy (RP)	1
	Silicon Valley Review of Global Entrepreneurship Research (SVRGER)	1
	Small Business Economics (SBE)	1
	Technology Analysis & Strategic Management (TASM)	1
	Technovation (T)	2
Education and Education Research	Academy of Management Learning & Education (AMLE)	6
	European Journal of Education (EJE)	1
	European Journal of Engineering Education (EJEE)	2
	Higher Education (HE)	1
	Higher Education in Europe (HEE)	3
	Industry & Higher Education (IHE)	9
	Journal of Education for Business (JEB)	1
	Journal of European Industrial Training (JEIT)	2
	Research in Higher Education (RHE)	1

To ensure reliability, following Dainow's (1986), all the articles in the database were reviewed and coded by the authors according to the taxonomy created, on two separate occasions, with a four-month gap between reviews. After an article was coded

the second time, the coding was compared to its original coding. In over 90 per cent of cases, codings were the same; differences were due to more consistent application of selection criteria. In a meeting, the coding was compared and discrepancies were discussed in order to reach a consensus.

This procedure yielded 60 peer-reviewed articles from 29 journals with the distribution shown in Table 3.2.

3.3.2 Analysis.

The analysis is divided into two parts. First, a taxonomy of articles is based on the contributions set out in subsection 2.1. The taxonomy is based on theory generation, i.e. articles are classified according to whether they attempt to make a significant theoretical contribution, as follows:

i. Articles that do not attempt significant theory-building – reporters – mostly include case studies that offer insights into a specific context and do not try to generate theory (as identified by Eisenhardt, 1989) and general appraisals of the practice of entrepreneurship education;
ii. Articles that provide empirical tests of previously existing theory in new experimental settings – testers;
iii. Articles that propose new theory, whether derived from case studies, observations and perceptions of established practice, or empirical regularities – builders and qualifiers, and expanders.

The second part of the analysis examines the nature and character of theory-building presented by the articles surveyed. This examination is twofold. First, the content of theoretical contributions is examined using Whetten's (1989) building blocks as a reference. The objective is to assess whether recent research on entrepreneurship education has contributed to conceptual elevation and unification. Second, the foundations of theory-building in each paper are classified according to the paradigms described by Gioia and Pitre (1990). Specifically, the roots of the theory developed in each paper are examined, in order to determine whether there is a dominant paradigm

(interpretivist, radical humanist, radical structuralist, or functionalist), or whether the paper applies a metaparadigm perspective to theory-building. Table 3.3 outlines the taxonomy developed.

Table 3.3 . Taxonomy of theoretical contributions

Taxonomy	Description		
Reporters	Descriptive analysis; replicate past findings		
		Content	**Foundation**
Testers	Test existing theory in new contexts		
Builders & Qualifiers	Development of new constructs, relationships or processes, and restriction/moderation of established relationships or processes	What, How, When, & Why	Interpretivist, Radical Humanist, Radical Structuralist, Functionalist, & Metaparadigm
Expanders	Development of new constructs, relationships or processes, while also testing existing theory		

Procedures

1. **Description:** articles are classified according to whether they attempt to make a significant theoretical contribution (reporter, tester, builder and qualifier, expander);
2. **Content:** articles with significant theoretical contributions (testers, builders and qualifiers, expanders) are examined according the content of theoretical contributions using Whetten's (1989) building blocks as a reference;
3. **Foundation:** articles with significant theoretical contributions (testers, builders and qualifiers, expanders) are classified according to the paradigms described by Gioia and Pitre (1990).

3.4 Typology of contributions

Some of the articles surveyed directly address the practice of entrepreneurship education by focusing on programs, methods, frameworks, and models. Other papers address the relationship between entrepreneurship education and other subjects of entrepreneurship research, including entrepreneurial intentions, attitudes, motivations, and propensity. This analysis does not reflect this separation, since it focuses primarily on the type and nature of contributions, and not on the specific insights generated.

3.4.1 Reporters.

Most reporters are case studies. Eisenhardt (1989) distinguishes between two types of case studies: those that intend to generate or build theory from data presentation, and those that offer insights of a specific context and do not intend to generate theory. The articles surveyed for this study that are based on case studies are entirely descriptive, presenting different realities as examples of good practices, and are not intended to generate theory.

Table 3.4 and Table 3.5 outlines the reporters surveyed. The case studies describe methods (Bager, 2011; Carey & Matlay, 2011; Clarke & Underwood, 2011); programs and subjects (Rasmussen & Sorheim, 2005; Bonnet, Quist, Hoogwater, Spaans & Wehrmann, 2006;Heinonen, Poikkijoki & Vento-Vierikko., 2007; Harkema & Schout, 2008; Papayannakis, Kastelli, Damigos & Mavrotas, 2008; Hyclak & Barakat, 2010); and entrepreneurial universities (Etzkowitz, Webster, Gebhardt & Terra, 2000; Miclea, 2006; Stankovic, 2006; Philpott, Dooley, O'Reilly & Lupton, 2011). When addressing a theoretical framework, some are very concise (e.g. Papayannakis et al. 2008; Hyclak & Barakat, 2010), while in others, theoretical considerations are spread throughout the text (e.g. Heinonen et al., 2007). In some instances, reference to theory is non-existent (e.g. Miclea, 2006; Stankovic, 2006; Clarke & Underwood, 2011). However, there are also case studies that present a well-defined, consistent theoretical framework supporting and contextualizing the reality being studied (e.g. Etzkowitz et al. 2000; Rasmussen & Sorheim, 2005; Philpott et al., 2011).

Other reporters examine the progress of entrepreneurship education in institutional terms, focusing mostly on supply and demand. Among these, Katz (2003) develops the most comprehensive chronology of entrepreneurship education (1876-1999), while Kuratko (2005) proposes some trends and challenges for the 21st century. Some reporters analyze the general state of entrepreneurship education in different countries (Redford & Trigo, 2007; Klandt, 2004; Klandt & Volkmann, 2006; Solomon, 2007), while others focus their analysis on the institutionalization of the field (Finkle &

Deeds, 2001; Finkle, 2010). Most reporters have a consistent, well defined framework, with the exception of Klandt's (2004).

Table 3.4. Outline of the reporters surveyed: Case Studies

Authors	Published	Journal	Main findings
Etzkowitz et al.	2000	RP	Comparative analysis between USA, Latin America, Europe, and Asia links the emergence of the "triple helix" framework with the development of an entrepreneurial paradigm in universities.
Rasmussen & Sorheim	2005	T	A case study of entrepreneurship education in Switzerland, focusing on learning-by-doing and action-based activities.
Bonnet et al.	2006	EJEE	A study of entrepreneurship training at Delft University of Technology focused on engineering innovation and sustainability.
Miclea	2006	HEE	A study of asymmetries in entrepreneurial attitudes at Babes-Bolyai University, focusing on the clash between individual entrepreneurialism and institutional barriers.
Stankovic	2006	HEE	Basic description of entrepreneurial initiatives at the University of Novi Sad.
Heinonen et al.	2007	IHE	Study of the application of an entrepreneurship-directed educational approach in Finland's universities finds that participating students increase their entrepreneurial potential. Student's entrepreneurial intentions influenced the way they perceived program's objectives.
Harkema & Schout	2008	EJE	Examines the foundations of entrepreneurship education carried out at the Center of Excellence in Innovation & Entrepreneurship at the University of Professional Education in The Hague. The competence-based program is based on a constructivist perspective and learner-centered theories where students are stimulated to create their own goals.
Papayannakis et al.	2008	EJEE	Study of the experience in curricula design and implementation for entrepreneurship education at National Technical University in Greece.
Hyclak & Barakat	2010	IHE	Study of the design and implementation of high tech entrepreneurship curricula at Cambridge University.
Bager	2011	IEMJ	Presents a case study of three different Danish training programs aimed at team building, creativity, and innovation promotion.
Clarke & Underwood	2011	IHE	Study of the introduction of volunteering opportunities into business ethics and enterprise modules to develop students' skills in real-life entrepreneurial cases.
Carey & Matlay	2011	IHE	Examines the emergence of online social media in pedagogy, and the roles of risk and responsibility in the assessment and support of business ideas.
Philpott et al.	2011	T	Study of the emergence of an entrepreneurial university, highlighting the divide between disciplines (science, engineering and medicine vs. social sciences and business).

Table 3.5. Outline of the reporters surveyed: Other

Authors	Published	Journal	Main findings
Finkle & Deeds	2001	JBV	Finds that, from 1989 to 1998, both the demand for and the supply of entrepreneurship faculty have increased in the US, even though there has been no mandate from the American Assembly of Collegiate Schools of Business for the incorporation of entrepreneurship into the curriculum of all accredited schools.
Katz	2003	JBV	Finds that, in the US, the entrepreneurship education has reached maturity, but growth is likely outside business schools and outside the US. Proposes that there are too many journals, a narrowing focus on top-tier publications and a shortage of faculty overall exacerbated by a shortage of specialized doctoral programs.
Klandt	2004	AMLE	Finds that, from 1998 to 2002 the number of professorships in entrepreneurship has increased in German-speaking Europe.
Kuratko	2005	ETP	Identifies trends and challenges in entrepreneurship education for the 21st century, including: a maturity/complacency/stagnation trap; a research/publications dilemma; and a faculty pipeline shortage.
Klandt & Volkmann	2006	HEE	Reports an increase in the number of entrepreneurship chairs at universities in Germany in the period of 1998-2004.
Redford & Trigo	2007	SVRGER	Reports trends in the development of entrepreneurship education in Portugal.
Solomon	2007	JSBED	Compares the results of a 2004/2005 survey of entrepreneurship education in the US with previous (1977-2000) national surveys, finding that, as the growth trend continued, the use of technology and the Internet started playing a major role in the field.
Finkle	2010	RBEJ	Reports an increase in US faculty positions in entrepreneurship from 1989 to 2008, as well as in candidates. Entrepreneurship tenure track positions have increased when compared with Finkle and Deed's (2001) initial study, suggesting that the field of entrepreneurship is becoming more institutionalized.

3.4.2 Testers.

Table 3.6 shows a summary of the testers surveyed. Most testers examine theories that are not directly associated with entrepreneurship education, focusing instead on:

- entrepreneurial intentions (Oosterbeek, Praag & Ijsselstein, 2010; Rodrigues, Raposo, Ferreira & Paço, 2010; Sánchez, 2011; Giacomin et al., 2011; Liñán, Rodríguez-Cohard & Rueda-Cantuche, 2011; Lanero, Vázquez, Gutiérrez & García, 2011);

- propensity (Kirby & Ibrahim, 2011);
- attitudes (Lena & Wong, 2003; Shinnar, Pruet & Toney, 2008; Teixeira, 2010); and
- motivations (Kourilsky & Walstad, 2002).

Some, however, try to measure the efficacy of entrepreneurship education (Fenton & Barry, 2011) or its impact on different countries (Lee, Chang & Lim, 2005).

Some analyze methods (Dutta, Li & Merenda, 2011) and materials (Edelman, Manolova & Brush, 2008), while others look at academic entrepreneurship (Klofsten & Jones-Evans, 2000) and faculty entrepreneurialism (Lee & Rhoads, 2004).

Table 3.6. Outline of the testers surveyed

Authors	Year	Journal	Main findings
Klofsten & Jones-Evans	2000	SBE	Examines the effects of entrepreneurial experience among academics in Ireland and Switzerland, finding that it translates into a high degree of involvement in consultancy and contract research, but not into organizational creation via technology spin-offs.
Kourilsky & Walstad	2002	IJEE	Looks at the impact of human capital and opportunity on the success of young entrepreneurs. Finds that professional experience and a technology-based idea or opportunity seem to be more important than entrepreneurship education.
Lena & Wong	2003	JEC	Finds that entrepreneurship education programs per se are not enough to promote entrepreneurial intentions and influence business start-up decisions. A positive attitude towards engagement in these programs seems important.
Lee & Rhoads	2004	RHE	Finds that teaching commitment of faculty diminishes with greater commitment to entrepreneurial activities, and also with increases in research funding.
Lee et al.	2005	IEMJ	Finds that the impact of entrepreneurship education on students' entrepreneurial intentions in Korea is much greater than in the U.S. but U.S. students have greater entrepreneurial intentions, probably because of a more entrepreneurship-oriented culture.
Edelman et al.	2008	AMLE	Finds a gap between practice and what is taught to entrepreneurship students and argues that entrepreneurship texts do not emphasize enough the activities that enhance the probability of starting a new venture.
Shinnar et al.	2008	JEB	Finds that student and faculty views on entrepreneurship often differ dramatically.
Oosterbeek et al.	2010	EER	Examines the effects of a compulsory program offered to young Dutch students. Finds that the program had significantly negative impact on entrepreneurial intentions and no impact on entrepreneurial skills.
Rodrigues et al.	2010	IJESB	Finds that (elective) entrepreneurship training has a significant influence on the propensity for new venture creation among students. Personal characteristics have an important role in shaping motivation and perceived hurdles have a negative impact on intentions.

Authors	Year	Journal	Main findings
Teixeira	2010	IHE	Finds that students who have business related competences and live in an environment that fosters entrepreneurship have a stronger desire to become entrepreneurs. Work experience and personality traits influence students' attitudes significantly.
Dutta et al.	2011	IEMJ	Finds that depth or specialization of entrepreneurship education helps facilitate the creation of new ventures. However it is breadth or diversity of educational experiences that positively influences future wealth creation.
Fenton & Barry	2011	IHE	Finds that benefits from entrepreneurship education occur mainly at the graduate level, when it is more meaningful, engaging and applied, suggesting that it should be promoted through experiential learning.
Giacomin et al.	2011	IEMJ	Finds that entrepreneurial disposition and intentions, as well as the sensitivity to each motivator and barrier, differ by country (American, Asian and European) but students across countries are motivated and/or discouraged by similar variables.
Lanero et al.	2011	IRPNM	Finds a positive effect of education on perceived entrepreneurship feasibility, which in turn positively affected entrepreneurial intentions by providing individuals with a feeling of personal competence.
Liñán et al.	2011	IEMJ	Finds that entrepreneurship education enhances perceived behavioral control, leading to greater entrepreneurial intentions. However, start-up decisions also depend on the "entrepreneurial orientation" of the individual and not only on perceived feasibility and desirability.
Kirby & Ibrahim	2011	IEMJ	Finds that entrepreneurial propensity of Egyptian students is higher than that of their counterparts in the UK.
Sánchez	2011	IEMJ	Finds that students participating in an elective entrepreneurship program increased their competences (self-efficacy, pro-activeness, risk-taking) and intentions towards self-employment.

A particularly interesting type of testers seeks to evaluate specific entrepreneurship education programs. While some of these cases suffer from selection bias due to elective participation in programs (Fenton & Barry, 2011; Sánchez, 2011), others have devised clever ways to avoid bias (Kirby & Ibrahim, 2011; Oosterbeek et al. 2010). Lee et al. (2005) observe both elective and mandatory programs. While, in general, studies tend to find that entrepreneurial intentions are enhanced by program participation, results differ depending on whether elective or compulsory programs are being observed. In programs where participation is compulsory, participants tend to dislike the program more, which negatively affects entrepreneurial intentions (Oosterbeek et al., 2010).

3.4.3 Builders.

Builder articles are at the core of theory generation in the field. The examination of the progress of entrepreneurship education through the analysis of published material and the generation of new theoretical contributions and improvements to existing ones has been a concern shared by several authors over the last decade.

Béchard and Grégoire (2005) highlight the main preoccupations in the field and develop a typology of them in entrepreneurship education.

Pittaway and Cope (2007); Mars and Rios-Aguilar (2010); and Yusof and Jain (2010) develop different frameworks for entrepreneurship in higher education, based on the findings of their surveys. Laukkanen (2000); Fiet (2000b); Honig (2004); Boyle (2007); and Blenker, Korsgaard, Neergard and Thrane (2011) propose new approaches and models. Fiet (2000a); Shepherd (2004); and Haase and Lautenschlager (2011) propose new methods and pedagogies.

Lobler (2006); Barbosa, Kickul and Smith (2008); Fayolle and Gailly (2008); Wollard (2010); Hjorth (2011); and Neck and Greene (2011) propose new programs and frameworks.

No qualifier articles were identified in this survey.

Most builders are based on a well-defined, consistent theoretical background supporting and contextualizing the research (Béchard & Grégoire, 2005; Mars & Rios-Aguilar, 2010), while in some the theoretical background underpinning the new theory being built is not well defined but is easy to recognize (Pittaway & Cope, 2005; Yusof & Jain, 2010; Neck & Greene, 2011).

A significant literature stream arises from the work by Fiet (2000a, 2000b).

The more interesting contributions propose a theoretical framework and apply to a specific program, which is evaluated on the basis of the proposed framework (Laukkanen, 2000; Lobler, 2004; Barbosa et al., 2008).

Table 3.7 summarizes the builders examined.

Table 3.7. Outline of the builders surveyed

Authors	Year	Journal	Main findings
Fiet	2000b	JBV	Appeals for educators to increase the theoretical content in their entrepreneurship courses and points several opportunities to build cumulative theory. A contingency approach for teaching entrepreneurship is proposed.
Fiet	2000a	JBV	Proposes a method to teach theory by establishing a student-approved system to enhance student motivation and participation in the acquisition of competences.
Laukkanen	2000	ERD	Proposes a business-generating model of teaching, implying a shift of mindsets or paradigms towards the role of the university in generating business strategies.
Honig	2004	AMLE	Presents two alternative experiential models of teaching entrepreneurship: the Experiential Model of Entrepreneurship Education (using simulations and convergent group thinking), and the Contingency Model of Business Planning Education (assimilation of concepts, accommodation of divergent thinking).
Shepherd	2004	AMLE	Argues that failure is an important source of learning for entrepreneurs and proposes the application of a specific pedagogy in the classroom to teach students to manage their emotions when faced with failures.
Béchard & Grégoire	2005	AMLE	Proposes that the literature on entrepreneurship education is articulated around four major types of preoccupations: social and economic roles of entrepreneurship education; systematization of entrepreneurship education; content and methodologies; and the needs of individual students in structuring teaching interventions.
Lobler	2006	TASM	The constructivist approach and an out of school learning environment are used as a theoretical base for entrepreneurship education, deriving principles for the promotion of a self-governed learning process.
Boyle	2007	IHE	Proposes a new model of entrepreneurship education focusing on the development of the individual, more than the dissemination of knowledge. Instruments include entrepreneurial retreats for the development of entrepreneurial thinking, new curricula and individualized entrepreneurial prescriptions, apprenticeships and opportunity centers.
Pittaway & Cope	2007	ISBJ	Develops a framework for entrepreneurship education, identifying key areas for empirical research: general policy climate for entrepreneurship education; general enterprise infrastructure; and contextual factors.
Barbosa et al.	2008	JEC	Proposes an approach for the development of an educational program in entrepreneurship to help students develop their entrepreneurial cognition and risk taking, reducing the risks of failing and of missing good opportunities, and developing both the intuitive and the analytic sides of student's cognition.

Authors	Year	Journal	Main findings
Fayolle & Gailly	2008	JEIT	Proposes a framework with two levels (ontological and educational) for the development of a teaching model where five questions should be addressed: why (goals); for whom (audience); for which results (evaluation criteria); what (contents and theories); and how (methods).
Mars & Rios-Aguilar	2010	HE	A framework for strengthening the application of entrepreneurial models to higher education research is introduced, based on the theoretical constructs of entrepreneurship found in the economics and management literature, such as disruption, innovation and value creation.
Woollard	2010	HEE	Proposes a theoretical framework that sees university entrepreneurship as an organizational process within an entrepreneurial system described as an input-process-output model with feedback effects of process outputs and outcomes.
Yusof & Jain	2010	IEMJ	Proposes a framework for research into university-level entrepreneurship including entrepreneurship teaching, academic entrepreneurship, and technology transfer.
Blenker et al	2011	IHE	Identifies four paradigms of entrepreneurship teaching and proposes the emergence of a new paradigm: “everyday practice,” related with the promotion of an entrepreneurial mindset. Argues that there is a logic progression between the existing paradigms and everyday practice.
Haase & Lautenschlager	2011	IEMJ	Identifies a "teachability dilemma" which emerges because while the importance of the entrepreneurial "know-how" is recognized, such know-how is also very difficult to teach because experience-based soft skills related to the entrepreneurship field are difficult to develop.
Hjorth	2011	ERD	An affect-based theory of entrepreneurial entrepreneurship education is developed in a model of provocation-based entrepreneurial entrepreneurship education (the E^3 model) which supports learning as a social creation process.
Neck & Greene	2011	JSBM	Argues that teaching entrepreneurship as a method that is teachable, learnable, but not predicted, requires practice and focus on a portfolio of techniques to practice entrepreneurship and encourage creating.

3.4.4 Expanders.

The expander articles surveyed emphasize theories or frameworks (Fayolle, Gailly & Lassas-Clerc, 2006; Kyro, 2008) or methods (DeTienne & Chandler, 2004; Graevenitz, Harhoff & Weber, 2010). All four expanders identified produce theory that is directly related to entrepreneurship education, except for Graevenitz et al. (2010), who focus on entrepreneurial intentions. All the articles compare their own theory with existing perspectives by applying it to a program and assessing its validity and consistency.

Table 3.8 outlines the expanders.

Table 3.8. Outline of the expanders surveyed

Authors	Year	Journal	Main findings
DeTienne & Chandler	2004	AMLE	Proposes a specific training intervention model based on generativity theory (SEEC: securing, expanding, exposing, and challenging) aimed at developing opportunity identification competences in the classroom.
Fayolle et al.	2006	JEIT	Develops a framework to assess and/or improve the design and execution of entrepreneurship education programs, linking characteristics of the program (setting and audience, type of program, objectives, contents, teaching and training methods, and approaches) with outcomes related with attitudes and intentions.
Kyro	2008	IJBG	Develops a framework that combines learning and teaching for fostering individual meta-competences (meta-affection, meta-conation and meta-cognition). These three constructs of personality and intelligence interplay and relate with the teaching and risk learning processes.
Graevenitz et al.	2010	JEBO	Proposes and tests a model of learning in which entrepreneurship education generates signals to the students. Using this model it is shown that the course induces sorting, and that entrepreneurship education may not always lead to stronger entrepreneurial intentions.

3.4.5 Content.

The testers examined make no significant theoretical contributions and in general it is not possible to detect the presence of Whetten's building blocks of theory development. An exception is Liñán et al. (2011), who identify and relate the *what, how* and *why* elements and explain their relationships.

In those articles classified as builders, three elements of theory development can be easily identified: *what*, *how* and *why*. *What* and *how* are related to the theoretical framework where concepts, constructs, variables and their relationships are described. *Why*, which relates to the explanation of the theoretical assumptions (explaining the relationships and dynamics between constructs and their application to the entrepreneurship education field), is sometimes under-addressed (Shepherd, 2004; Boyle, 2007). The fourth element of theory development, which is related to testing – *who, where* and *when* – is usually not addressed in the builder category, although some

articles may present a brief, informal, non-systematic evaluation of the programs (Laukkanen, 2000; Lobler, 2006; Barbosa et al., 2008).

The articles classified as expanders, including DeTienne and Chandler (2004); Fayolle et al. (2006); Kyro (2008); and Graevenitz et al. (2010) display consistent elements of theory-development: *what, how, why* and *who, where, when.* When compared to builders, expanders contribute more significantly to theory since these articles assess the *what, how* and *why* elements, analyzing temporal and contextual factors, testing the propositions of the theoretical model and thus increasing theory applicability. An analysis of theoretical contributions according to paradigms of theory-building paradigms reveals that a large majority of contributions are rooted in the functionalist and radical structuralist views. Table 3.9 summarizes testers, builders, and expanders according to the dominant theory-building paradigm.

Table 3.9. Paradigms of theory-building

Paradigm of theory-building	Type of article	Nr. of articles
Interpretivist	Builders	4
Radical Structuralist	Builders	14
Functionalist	Testers	16
Functionalist-Radical Structuralist Transition Zone	Testers	1
	Expanders	4

All testers are rooted in the functionalist paradigm, where the main goal is to test in order to predict and control, showing how the theory is refined, supported or disproved. There is, however, one tester (Liñán et al., 2011) which should be placed in the transition zone between functionalism and structuralism, due to the coexistence of testing and an aspiration to change reality and practices. These features are also displayed by all four expander articles, which are also classified in this transition zone, (DeTienne and Chandler, 2004; Fayolle et al., 2006; Kyro, 2008; Graevenitz et al., 2010).

Four articles classified as builders are founded on the interpretivist paradigm: Béchard and Grégoire (2005); Pittaway and Cope, (2007); Mars and Rios-Aguilar (2010); and Yusof and Jain (2010). In these articles, the main purpose is to describe and explain in order to diagnose and understand where new concepts and relationships emerge. All the other builders surveyed are rooted in the radical structuralist paradigm, as their

main goal is to understand, explain, criticize and act, showing how practices should change.

3.5 Conclusion

The aim of this study has been to review the literature on entrepreneurship education over the last decade (2000-2011), focusing in particular on theoretical contributions. The survey shows that theoretical contributions on entrepreneurship education have been increasing and improving in terms of scope and methodology, but there still seems to be a lack of articles that expand knowledge by simultaneously making new theoretical propositions and testing those propositions in new experimental settings. Also, theory-building and theory-testing are still rooted in single paradigms, limiting the generation of more complete and eclectic knowledge.

The present work contributes to the literature by providing an overview of the current state of the field, highlighting main trends and gaps. The application of a taxonomy based on the Business and Management literature to analyze theoretical contributions in the field of entrepreneurship education is original and can provide a means for evaluation of progress in the field over time.

3.5.1 Contribution.

3.5.1.1 Taxonomy of Articles.

Although all articles examined are deemed important for the advancement of the field, some have contributed more by going further than just describing the existing reality, by testing existing theory or developing new theories without experimentation. As Colquitt and Zapata-Phelan (2007) argue, theory-building and theory-testing can coexist in the same article, and those who succeed at both presenting a new theory and testing it are likely to make longer-lasting contributions.

More than half of the articles reviewed emphasize theory testing and/or theory development (therefore earning a classification as builders, testers or expanders), showing evidence that the appeal made by several authors (e.g. Whetten, 1989; Van de

Ven, 1989; Fiet, 2000b; Rindova, 2008), for more theory has had some resonance in the field. Evolution over the last few years shows that reporter articles (including descriptive case studies) have not increased significantly in number, while testers and builders have. This finding is somewhat at odds with Colquitt and Zapata-Phelan (2007) who report an increase in expanders and a decrease in testers. Since these authors focused solely on articles in the AMJ, our findings seem to show that the literature at large has not – unlike the AMJ – emphasized expanders, and still seems to be more focused on testing existing theories or presenting new theoretical contributions without testing them.

In general, the field of entrepreneurship education does not seem to have evolved as much as would be expected over the 25 years since Ronstadt's (1985, p.49) diagnosis: "the field is new; it is hard to defend; it has little conceptual substance because it is so young; anyone can kill a new idea". And, perhaps because entrepreneurship education is still an evolving field (Chandler & Lyon, 2001; Busenitz et al., 2003) where paradigms are still lacking, this survey finds that: (i) there is a strong focus on the analysis of the *current state* of entrepreneurship education; (ii) most builder and expander articles are centered on the development of methods, programs and new theories or frameworks; and (iii) most tester articles are related to theories focusing on subjects other than entrepreneurship education, such as entrepreneurial intentions. One expects that, when the field is more consolidated and institutionalized, there will be a shift in the focus of the theory towards a greater refinement and a clearer emphasis on concepts and processes directly associated with entrepreneurship education.

Theory-building from case studies does not seem to be a common trend, even though this is an appropriate method for early stages of research in a field (Eisenhardt, 1989), like entrepreneurship education. None of the many articles surveyed that report case studies link results from a specific context with literature about other contexts, which compromises their conceptual elevation and generalization of data. Theory-building in entrepreneurship education is, therefore, founded on observations that go beyond specific cases.

3.5.1.2 Content.

This makes theoretical frameworks especially important, as they need to contextualize the domain or subject of theory (Whetten's *what* and *how*). Assessment of articles classified as builders and expanders is positive from this point of view, as most articles do have a consistent, well defined framework. In the tester articles surveyed, a poor or inexistent theoretical framework usually means that the interpretation of patterns or discrepancies with reference to the theory being tested is also poor.

Theory generation in the field of entrepreneurship education is a concern shared by journals focusing on business and management and on education. In the particular case of management journals, the expansion of theory development is in line with Colquitt and Zapata-Phelan's (2007) prediction that theory-building would increase in management literature as the field became more mature. Where the substance of theoretical contributions is concerned, expander articles have the greatest potential to be influential with both academics and practitioners, and it can be argued that there is a shortage of such articles in recent literature. Whetten's four building blocks of theory development are better addressed in the four expander articles identified. By testing their theoretical propositions in real contexts, expanders can better address the key questions postulated by Bergh (2003): (i) in what way does the contribution revise or extend theory development? (ii) is the contribution going to be useful? (iii) will it change the way of thinking about the phenomenon?

A critical issue for the generation of more expander articles is the development of experimental evidence (Whetten's *who, where, when*). This survey supports Colquitt and Zapata-Phelan's (2007) findings that most articles developing new theory do not test their theoretical propositions in experimental settings. Theory applicability is therefore severely limited. Honig (2004) argues that entrepreneurship education seems to be *atheoretical* in the sense that empirical evidence supporting its theories and models is missing. While several authors call for more empirical testing of their own theories or approaches, they do not address this concern themselves. The present article argues that future work should focus on producing more expander articles,

following three steps: (i) analyze the existing reality and identify gaps in recognized practice which can be addressed in a general manner; (ii) address these gaps by operationalizing theoretical propositions that can be applied generally; and (iii) implement and test the theoretical prescriptions in an experimental setting that can provide an accurate impression of the applicability of the theory developed. To illustrate these three steps, an example is provided. The lack of uniformity in the programs offered is mentioned by Gorman at al. (1997) as a gap that should be addressed in future research. Based on the analysis and evaluation of different entrepreneurship education programs, theoretical propositions should be developed regarding the best strategies and practices to implement in the classroom. These strategies and practices should be implemented in the classroom and its impact further evaluated, and a follow-up should be made in order to assess the effectiveness of these measures.

With regard to the empirical testing of theoretical propositions, improvements can be observed when comparing the articles being surveyed here with those that are included in the 10-year literature review by Gorman et al. (1997). In particular, selection bias is more regularly addressed now, as some entrepreneurship education programs have become mandatory, and research has been conducted in those contexts. However, as pointed out above, the mandatory nature of entrepreneurship education can lead to unexpected results (such as a decrease in entrepreneurial intentions), as subjects develop more realistic expectations, becoming more aware that they are not well-suited for entrepreneurial activities. Still, this should not be seen as a negative effect of entrepreneurship education.

3.5.1.3 Paradigms.

Notwithstanding the appeal made by Gioia and Pitre (1990) for a metaparadigm perspective in theory development, most articles concerned with theory in the field of entrepreneurship education remain based on a single paradigm. Almost all tester articles are firmly based on a functionalist paradigm, while builders are founded on the radical structuralist paradigm. Expander articles have a greater potential to straddle these two paradigms, adopting what may be called a multiparadigm, or transition

approach, integrating elements of functionalism and radical structuralism. The lack of a true multidisciplinary, metaparadigm perspective restricts a more eclectic, comprehensive analysis of entrepreneurship education. At this stage of development of the field there is still a strong desire to test and change reality, proposing new practices, rather than changing ideologies and criticizing existing structures.

To summarize, it is possible to find logical patterns linking the contents and paradigms underpinning most articles, expander articles typically, address all four questions posed by Whetten (1989) and are rooted in a multiparadigm, transition approach that integrates functionalism and radical structuralism by proposing changes to the accepted body of knowledge and testing these changes in an experimental setting. Builder articles are more limited in the sense that they address only three of Whetten's questions (*what, why*, and *how*), being rooted in the radical structuralist paradigm by proposing changes to the existing knowledge but not testing these changes. Most tester articles address only the *what* question, as they are founded on the functionalist paradigm by developing constructs and variables to test existing knowledge in new settings.

This survey suggests that the literature on entrepreneurship education is focused on what works in the classroom and what tools and models can be used to increase the quality of what can be delivered.

3.5.2 Limitations.

This survey is not exempt from limitations. The methodological choices for the search led to a process of selection that might have left out some important contributions to the field of entrepreneurship education. While the coding scheme and categories of analysis chosen fit the purposes of the analysis, important issues may have been left behind. The deliberate choice to concentrate on a period covering roughly the last decade before 2012 means that some recent contributions may have escaped the analysis. It is believed, however, that the articles surveyed provide an accurate overview of the development of research in the field, its main gaps and achievements.

3.5.3 Implications for further research.

In spite of these limitations there are also important opportunities for future research. Table 3.10 summarizes the main gaps identified, highlights their consequences, and proposes solutions for addressing those gaps, in order to increase the consistency of the body of knowledge.

Table 3.10. Gaps, problems, and opportunities for future research

Gaps found	What if those gaps are not filled?	Future challenges or avenues for research
Poor theoretical frameworks.	Limited interpretation of patterns or discrepancies.	To characterize better the frameworks of the studies, defining concepts and their relationships.
Absence of theory-building from case studies; most case studies do not link their findings with other literature.	Fewer insights for the field; conceptual elevation and generalization of data will be conditioned.	To use case studies to build theory following Eisenhardt's (1989) stages; link the results of case studies with the literature on other contexts.
Sample selection bias.	Biased results and problems in the generalization of results.	To focus on compulsory entrepreneurship courses, or on purposeful samples.
Lack of experimental evidence on theories/methodologies proposed.	Theories and methodologies lacking practical validity.	To develop more experimental evidence confronting the new theories proposed and those that already exist in order to assess their validity.
The lack of longitudinal studies that derive causal attributions.	The analysis of causal attributions as modifications of behaviors or other changes occur is not possible.	To conduct longitudinal studies in the field of intentions, intentions-behaviors, and changes on both of them.
The lack of a metaparadigm perspective.	A reductionist vision of reality, instead of an eclectic and comprehensive one.	To analyze the same phenomenon under different paradigms, involving researchers from different fields.
Reduced uniformity in the programs offered.	Lack of consistency in the practice of entrepreneurship education.	Instead of creating whole new programs, use previous and already developed programs and build upon them, testing the effects of incremental changes.

Based on previous analysis and discussion, several lines of inquiry emerge:

i. To use case studies to build theory; to link case study results with the literature on other contexts (avoiding focusing on context-specific experiences, increasing the generalization of results).
ii. To undertake empirical studies testing existing theories and methodologies, and include experimental evidence in all theories or methodologies proposed.
iii. To develop a metaparadigm approach to theory-building, involving researchers from different fields.

The booming pursuit of entrepreneurship education over the last few decades has attracted a growing interest in entrepreneurship education research, leading to an increasingly rich field of study, although characterized by some inconsistency of the body of knowledge, which is reflected in the quality of theoretical contributions, and in the consistency of guidelines to adopt in the entrepreneurial classroom.

It is possible to conclude that theoretical contributions to entrepreneurship education have been increasing and improving, especially thanks to publication of greater numbers of tester and builder articles. New, different ideas have emerged, been articulated, organized, and connected, suggesting new directions for researchers (Rindova, 2008). However, there is still considerable scope for improvement, in particular through the development of more expander articles that make new theoretical propositions and test them propositions in new experimental settings. Theory-building and theory- testing are still rooted in single paradigms, limiting the generation of more complete, eclectic knowledge.

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Conceptual Study 2

A systematization of the literature on entrepreneurship education: challenges and emerging solutions in the entrepreneurial classroom

Abstract

This article focuses on the educational/operational dimension of entrepreneurship education. It reviews the literature published over the period 2000-2011 with two purposes: to propose a framework of analysis to systematize and assess literature, and to examine its main insights and contributions towards practice in the entrepreneurial classroom. This time period is particularly relevant since the last decade has seen significant developments in entrepreneurship education. Findings show that a very significant share of research on entrepreneurship education over the period of analysis has sought to evaluate its results. There is still not a consistent body of knowledge in entrepreneurship education that can provide general insights and tools towards practice. Practitioners need to pick and choose which pedagogical approaches and methods better suit their particular context. The article concludes by suggesting challenges for entrepreneurship education research to improve the practices in the entrepreneurial classroom.

Keywords:

Entrepreneurship education; entrepreneurial classroom; framework of analysis.

4.1 Introduction

Interest in entrepreneurship education inside academia has increased and spread widely around the world in recent decades, as predicted by Ronstadt (1985). The proliferation of courses in business schools in the USA and worldwide has been accompanied by an increasing diversity in pedagogic approaches (Vesper & Gartner, 1997; Katz, 2003). Entrepreneurship is now a well-established academic discipline (Gartner & Vesper, 1994; Fiet, 2000a) and a legitimate course of study (Vesper & Gartner, 1997; Katz, 2003). The booming pursuit of entrepreneurship education over the last few decades has

drawn a growing interest in entrepreneurship education research, leading to the establishment of an increasingly rich field of study.

Entrepreneurship education is a complex process. Gartner and Vesper (1994) examine the successes and failures of entrepreneurship education experimentation in different countries and reveal a considerable diversity of programs offered, a feature also noticed by Gorman, Hanlon and King (1997). Widespread methods used in entrepreneurship courses or programs include: case studies; readings (Gartner & Vesper, 1994); business plans (Hills, 1988; Vesper & McMullan, 1988; Gartner & Vesper, 1994); interviews with entrepreneurs (Solomon, Weaver,& Fernald, 1994); class discussion (Solomon, 2007); guest speakers (Solomon, 2007; Gartner & Vesper, 1994); business visits and field trips (Gartner & Vesper, 1994); internships and working with entrepreneurs (Hills, 1988; Johannisson, 1991); and development of business start-ups (Hills, 1988). The use of technology has been increasing (Solomon, 2007) and computer-based simulations are gaining acceptance (Shepherd, 2004; Haase & Lautenschlager, 2011).

Despite these developments, there are issues which remain overlooked, such as entrepreneurship educators' need for unified contents and teaching methods (Gorman et al., 1997). Pedagogical competences and methodologies still need to be developed (Kuratko, 2005), and questions related with best practices to adopt in the entrepreneurial classroom are emerging, as predicted by Katz (2003).

The absence of a unified, accepted theory or definition of entrepreneurship education is an issue which remains unresolved (Sexton & Bowman, 1984; Hills, 1988; Fiet, 2000a). Fayolle and Gailly (2008) argue that there is a lack of a precise definition of entrepreneurship as a teaching field, where philosophical conceptions about teaching, the role of the teacher and the role of the students, should be clarified in each course.

Literature reviews are important to analyze recent research, to reflect about the course of future developments, such as Dainow (1986) and Gorman et al. (1997) emphasize and, to provide practical guidelines for educators. However, there have been no impactful literature reviews on entrepreneurship education over the last decade. It seems, therefore, a good time to provide an analysis of the progress in the field. As

pointed out by Low and MacMillan (1988), occasionally it is important to stop, reflect and analyze what has been done, identifying new trends and challenges. In an attempt to close existing gaps, related with the analysis of the last year's literature and trends, as well as the best practices to promote entrepreneurship education, we develop this study.

From different fields of knowledge, several frameworks emerge to analyze educational programs and to improve the teaching and learning process. The present article builds upon the frameworks of Mialaret (2005/1976), Béchard and Grégoire (2005b), and Fayolle and Gailly (2008), applied to the domain of entrepreneurship education. These authors define two dimensions of study in their frameworks: ontological (definitions/concepts), and educational/operational (operationalization of the ontological dimension into teaching actions). This article focuses on the educational/operational dimension and proposes a common framework of analysis encompassing theoretical and empirical articles published on the subjects of entrepreneurship education methodologies, theories, contents, frameworks and evaluation of programs/subjects, selected from a wide range of journals in the fields of Management and Education over the period 2000-2011. This framework has two main purposes: to systematize and structure the theoretical and empirical insights produced; and to analyze the main challenges and emerging solutions in the entrepreneurial classroom. Several questions are addressed. Which theoretical and empirical insights have been produced and what can we learn from them? How to improve and increase efficacy on the entrepreneurial classroom? Which challenges still remain for educators? This analysis is of interest not only to researchers, but also to practitioners (e.g. policy makers, entrepreneurship educators, educational leaders).

The study is organized as follows. After this Introduction, Section 2 presents the framework of analysis and discusses its theoretical underpinnings. Section 3 presents the methodology used. Section 4 presents the results, divided in two parts: integration of studies in the framework, and respective distribution of dimensions across journals. Section 5 discusses the results of the analysis with reference to the implementation of the framework and the literature's contributions towards practice in the classroom.

Section 6 concludes, reflecting on the value and limitations of the analysis while providing suggestions for future research.

4.2 Framework of Analysis

Mialaret (2005/1976) proposes a theoretical framework involving several inter related questions that should be addressed before designing and implementing an education program:

- Why? (objectives);
- What? (contents);
- For Whom? (audience);
- How? (methodologies) and,
- For Which Results? (evaluation).

The answer to the *Why*? question varies depending on the type of discipline, type of study and society; the *What*? question is related with the selection of contents; the *For whom*? question focuses on the knowledge of the type of students being addressed; the *How*? question focuses on the general pedagogical methodologies; and the *For Which Results*? question refers to the evaluation process and consists in analyzing the extent to which the outcomes correspond to the objectives initially set.

Focusing specifically on management/entrepreneurship education, Béchard and Grégoire (2005b) propose a general framework for teaching and learning entrepreneurship where ontological and operational dimensions of entrepreneurship education are emphasized. The ontological dimension is related to the concepts and educators' assumptions, while the operational dimension is related to the educational practice. The ontological dimension of teaching models integrates philosophical paradigms, theoretical bases, and educators' conceptions while the operational dimension is related with the operationalization of the ontological dimension into teaching actions, and includes four elements: (i) teaching goals; (ii) knowledge emphasis; (iii) pedagogical methods and means; (iv) forms of evaluation.

Based on the perspectives of Mialaret (2005/1976), and Béchard and Grégoire (2005b), Fayolle and Gaily (2008) develop a conceptual framework for entrepreneurship education encompassing two dimensions: ontological and educational. These authors use this framework to analyze different types of entrepreneurship teaching programs, focusing on three broad categories of learning processes: training entrepreneurs or professionals in the field (skills); preparing entrepreneurial individuals (mindset); and educating entrepreneurship professors and researchers (theories).

The ontological dimension of a *teaching model* for entrepreneurship education contains two levels: definition of entrepreneurship as a teaching field; and definition of education within the entrepreneurship context. Fayolle and Gailly (2008) examine several definitions of entrepreneurship education, suggesting that entrepreneurship programs should focus on a clear concept of entrepreneurship. Concerning the educational level, these authors reprise Mialaret's (2005/1976) set of questions (although in a different order): *Why*? (goals); *For Whom*? (audience); *For Which Results*? (evaluation criteria); *What*? (content and theories); and *How*? (methods).

Why? addresses the objectives of entrepreneurship education. According to Fayolle and Gailly (2008), entrepreneurship education should have learning (micro/individual) and socio-economic (macro/society) objectives. These objectives are related with the development of an entrepreneurial mindset, as well as with the transmission of techniques to create new ventures, and with the improvement of the society mindset concerning the entrepreneurial phenomenon. *For Whom*? highlights the need to adapt to the audience's characteristics (prior entrepreneurial experience and knowledge, level of involvement, and commitment in the entrepreneurial process). *For Which Results*? stresses the importance of evaluating teaching programs from their conception, defining the evaluation criteria (knowledge, skills, intention, and motivation), as well as measurement methods. *What*? refers to teaching contents, while *How*? refers to teaching methods.

The present article focuses on the operational or educational dimension of entrepreneurship education. The core ideas of the three works that frame the approach taken by the present study are summarized in Table 4.1.

Table 4.1. Framework of analysis

Literature review: Selected Perspectives			
Authors	Mialaret	Béchard & Grégoire	Fayolle & Gailly
Date	2005/1976	2005	2008
Scientific field	Education	Management/ Entrepreneurship	Management/ Entrepreneurship
Focus/Unit of Analysis	Theory of programs	Teaching models	Entrepreneurship education programs
Questions	1.Why 2.What 3.For whom 4.How 5.Results	1.Teaching goals 2.Knowledge 3.Pedagogical methods 4.Forms of evaluation	1.Why 2.For whom 3.For which results 4.What 5.How
Dimensions of Analysis: Integration of Perspectives			
Why? 'Why'	Learning and socio-economic objectives		
What? 'What'	Knowledge, contents and theories		
For whom? 'Whom'	Audience characteristics, focus, level of analysis		
How? 'How'	Pedagogical methodologies and techniques		
For which results? 'Which'	Evaluation criteria and measurement tools		

4.3 Method

This analysis focuses on academic articles published over the period 2000-2011 on the subject of entrepreneurship education in higher education. This time period is particularly relevant since the last decade has seen significant developments in entrepreneurship education with the creation of a large number of programs inside and outside business schools, plus a variety of courses covering specific subjects within entrepreneurship (such as, for instance, opportunity recognition, business models, and entrepreneurial finance). Also, the last impactful reviews of the subject appeared in the late 1990s (for instance: Gorman et al., 1997), and Fiet's (2000a, 2000b) articles on the state of entrepreneurship education, including his appeal for more theory in entrepreneurship courses, appeared in 2000. It seems therefore important to assess the developments that have occurred in the field since.

Articles come from peer-reviewed journals in the subject categories of Business, Management; Education and Educational Research. Most of these journals are listed in the ISI Web of Knowledge. The selection of articles was carried out with the objective of covering the widest possible range of journals in the fields of Management and

Education integrating theory and empirical articles about entrepreneurship education (methodologies, theories, contents, frameworks and evaluation of programs/subjects). Interviews, reports, introductions to special issues, and presentations are excluded.

Table 4.2 outlines the search methodology. Two searches were conducted: the first search was carried out on the websites of the most prestigious journals in each of the areas listed above, according to ISI impact factor; the second search covered business and academic databases (such as EBSCO), thereby adding more journals to the initial sample. Following the procedure adopted by Busenitz et al. (2003), Coviello and Jones (2004), and Ireland, Reutzel and Webb (2005), the searches were based on keywords in the journal articles' titles and abstracts.

Table 4.2. Stages of the Review Methodology

	First Search
1	In the ISI Web of Knowledge (Journal of Citation Reports 2010 – Social Sciences Edition) list of journals, the following subject categories (journal type) were selected: Education and Educational Research; Management; and Business.
2	Journals were also selected that were not indexed on ISI Web of Knowledge, but included articles about this theme, such as: *Higher Education in Europe*, *Teaching in Higher Education*, *International Entrepreneurship*, *International Review of Entrepreneurship*, *International Journal of Entrepreneurship education*.
3	A search was conducted for articles that met four criteria: (1) peer review; (2) use of one or more of the following keywords in the title or abstract*: entrepreneurship education; educating entrepreneurship; teaching entrepreneurship; entrepreneurial university; entrepreneurship faculty; academic entrepreneurship; university entrepreneurship; enterprise education; and entrepreneurialism;* (3) publication between 2000 and 2011, inclusive; (4) focus on entrepreneurship education methodologies, theories, contents, frameworks and evaluation of programs/subjects.
	Second Search
4	Search in business and academic databases (such as EBSCO) for articles about entrepreneurship education, using the above mentioned keywords.
	Data analysis
5	The data were 'cleaned' by excluding interviews, book reviews, editorial notes reports, introductions to special issues, and presentations. Articles that do not look at entrepreneurship education per se (such as works focusing on university administration and technology commercialization) were also excluded. The searches resulted in a set of 152 articles that met the selection criteria.
6	Articles were then read and analyzed. A total of 92 studies were dropped from further analysis since they did not meet the criteria described in (3), 60 articles remaining in the final set.
7	A database of all relevant articles was created and additional information such as the article title, its author(s) details, the journal, the year of publication and an overview of the article were recorded.

The keywords searched were the following: *entrepreneurship education; educating entrepreneurship; teaching entrepreneurship; entrepreneurial university; entrepreneurship faculty; academic entrepreneurship; university entrepreneurship; enterprise education; and entrepreneurialism.* Examples of articles that were excluded from the review because they did not focus on entrepreneurship education per se (for instance, works focusing on university administration and technology commercialization) include Shane (2004) on university patenting, and Powers (2004) on technology transfer, among others. This procedure yielded 60 peer-reviewed articles from 29 journals with the distribution shown in Table 4.3.

Table 4.3. Distribution of articles per peer-reviewed journals

Subject Category	Journal Name (abbreviation)	Nr.Articles
Business and Management	Entrepreneurship & Regional Development (ERD)	2
	Entrepreneurship Theory & Practice (ETP)	1
	European Economic Review (EER)	1
	International Entrepreneurship Management Journal (IEMJ)	9
	International Journal of Business and Globalization (IJBG)	1
	International Journal of Entrepreneurship and Small Business (IJESB)	1
	International Journal of Entrepreneurship Education (IJEE)	1
	International Review on Public and Nonprofit Marketing (IRPNM)	1
	International Small Business Journal (ISBJ)	1
	Journal of Business Venturing (JBV)	4
	Journal of Economic Behavior & Organization (JEBO)	1
	Journal of Enterprising Culture (JEC)	2
	Journal of Small Business and Enterprise Development (JSBED)	1
	Journal of Small Business Management (JSBM)	1
	Research in Business and Economics Journal (RBEJ)	1
	Research Policy (RP)	1
	Silicon Valley Review of Global Entrepreneurship Research (SVRGER)	1
	Small Business Economics (SBE)	1
	Technology Analysis & Strategic Management (TASM)	1
	Technovation (T)	2
Education and Education Research	Academy of Management Learning & Education (AMLE)	6
	European Journal of Education (EJE)	1
	European Journal of Engineering Education (EJEE)	2
	Higher Education (HE)	1
	Higher Education in Europe (HEE)	3
	Industry & Higher Education (IHE)	9
	Journal of Education for Business (JEB)	1
	Journal of European Industrial Training (JEIT)	2
	Research in Higher Education (RHE)	1

In order to systematize the contents of the articles analyzed, these were first classified into three main categories, according to the APA (2010) typology: empirical

(original research that confronts, tests or describes something, contributing to the field through the presentation of insights); theoretical (theory generation through the presentation of models, frameworks, typologies, classification schemes, new theories); and case studies (description of cases related with individuals or organizations to illustrate a problem, to show the way to solve a problem, or to clarify theoretical issues). Whenever an article introduces a new theory and tests it empirically, it is considered a theoretical article, as the main emphasis of such articles is not to test existing theory in new settings, but to propose new theoretical concepts and insights. The classification yielded is presented in Table 4.4.

Table 4.4. Distribution of articles according to APA (2001) typology

Case studies	Theoretical	Empirical
Harkema & Schout	Béchard & Grégoire	Klofsten & Jones-Evans
Bager	Mars & Rios-Aguilar	Finkle & Deeds
Stankovic	Pittaway & Cope	Kourilsky & Walstad
Miclea	Haase &Lautenschlager	Lena & Wong
Rasmussen & Sorheim	Yusof & Jain	Klandt
Etzkowitz et al.	Fiet a)	Lee & Rhoads
Philpott et al.	Fiet b)	Lee, Chang & Lim
Carey & Matlay	Blenker et al.	Redford & Trigo
Clarke & Underwood	Kuratko	Klandt & Volkmann
Hyclak & Barakat	Katz	Solomon
Papayannakis et al.	Shepherd	Rodrigues et al.
Heinonen, Poikkijoki & Vento-Vierikko	Hjorth	Teixeira
Bonnet et al.	Boyle	Finkle
	Honig	Sánchez
	Neck & Greene	Giacomin et al.
	Fayolle & Gailly	Kirby & Ibrahim
	Woollard	Dutta, Li & Merenda
	Lobler	Edelman, Manolova & Brush
	Kyro	Liñán, Rodríguez-Cohard & Rueda-Cantuche
	Barbosa, Kickul & Smith	Fenton & Barry
	Laukkanen	Shinnar, Pruett & Toney
	Fayolle, Gailly & Lassas-Clerc	Lanero et al
	DeTienne & Chandler	Oosterbeek, Van Praag & Ijsselstein
	Graevenitz, Harhoff & Weber	

The contents of the articles were then analyzed and classified based on the dimensions of analysis delineated in Table 4.4, based on the questions proposed by

Fayolle and Gailly (2008). Specifically, articles were classified based on whether they directly address each of the five questions: *Why*; For Whom (henceforth identified only as *Whom*); For Which Results (henceforth identified only as *Which*); *What*; and *How*. Articles addressing multiple questions were identified as such (for instance: How+What+Which). The authors independently coded the 60 selected articles according to this taxonomy. In a meeting, the coding was compared and discrepancies were discussed in order to reach a consensus.

4.4 Results

4.4.1 Incorporation of the Articles into the Framework.

Table 4.5 provides examples of how different types of articles tackle the most commonly addressed dimensions (i.e. *How, What* and *Which*) in the recent literature on entrepreneurship education. These excerpts provide an indication of how research on entrepreneurship education has built theory and empirically assessed it.

Table 4.5. Representative excerpts of how articles address the dimensions of analysis

How	What	Which
Theoretical "This second article discusses a strategy for teaching entrepreneurship theory. An effective strategy for teaching theory to students must be approved by them and monitored by teachers to be effective…the most effective method is to establish a student-approved system for class meetings that requires students to practice specific skills." Fiet (JBV, 2001 b, p.101)	**Theoretical** "…we content-analyze a sample of 103 peer-reviewed entrepreneurship education articles through the prism of Bertrand's (1995) Contemporary Theories and Practice in Education. Our results indicate that this literature is articulated around four major types of education preoccupations…" Béchard and Grégoire (AMLE, 2005, p.22)	**Empirical** "This study tests the effect of entrepreneurship education programs on the entrepreneurial competences and intention of university students…We used a pretest-post-test quasi-experimental design. The results showed that students in the 'program' group increased their competences and intention towards self-employment…" Sánchez (IEMJ, 2011, p.239)
Case Study "The University of Novi Sad in Serbia is taken as an example of how one university in a transition country, which as lacking tradition in entrepreneurial practices, is trying to become an entrepreneurial university. Examples of new practices are also described as the establishment of a university incubator…" Stankovic (HEE, 2006, p.117)	**Theoretical** "Academics should, therefore, desist from simply teaching hard facts and knowledge on business creation and restructuring business management curricula to the effect that the "know-what" component of conventional EE is integrated." Haase and Lautenschlager (IEMJ, 2011, p.157-158)	**Theoretical** "This paper seeks to provide an analytical overview of the current state of entrepreneurship education in the USA for the years 2004-2005. The 2004-2005 survey indicates that the trends, especially in the use of technology…have continued in a similar direction." Solomon (JSBED, 2007, p.168)

Table 4.6 presents the distribution of articles according to the dimensions of analysis of the proposed framework. The analysis indicates that the questions most commonly addressed by articles in the selected sample are: *Which* (25 articles, 22 empirical, 3 theoretical and 1 case study); *How* (9 articles, 3 theoretical and 6 case studies); and *What* (5 theoretical articles).

Table 4.6. Distribution of articles according to dimensions of analysis

Klofsten & Jones-Evans (2000)	**Which**	**How**	Fiet (2000b)
Finkle & Deeds (2001)			Shepherd (2004)
Kourilsky & Walstad (2002)			Stankovic (2006)
Lena & Wong (2003)			Miclea (2006)
Klandt (2004)			Rasmussen & Sorheim (2005)
Lee & Rhoads (2004)			Etzkowitz et al. (2000)
Lee, Chang & Lim (2005)			Blenker et al. (2011)
Redford & Trigo (2007)			Carey & Matlay (2011)
Klandt & Volkmann (2006)			Clarke & Underwood (2011)
Solomon (2007)		**How + What**	Hjorth (2011)
Rodrigues et al. (2010)			Boyle (2007)
Teixeira (2010)			Honig (2004)
Finkle (2010)			Neck & Greene (2011)
Sánchez (2011)			Fayolle & Gailly (2008)
Giacomin et al. (2011)			Woollard (2010)
Kirby & Ibrahim (2011)		**How + Which**	Bonnet et al. (2006)
Dutta, Li & Merenda (2011)			Heinonen, Poikkijoki & Vento-Vierikko (2007)
Edelman, Manolova & Brush (2008)			Papayannakis et al. (2008)
Katz (2003)			Hyclak & Barakat (2010)
Kuratko (2005)			Bager (2011)
Shinnar, Pruett & Toney (2009)			Harkema & Schout (2008)
Lanero et al. (2011)			Liñán, Rodríguez-Cohard & Rueda-Cantuche (2011)
Oosterbeek, Van Praag & Ijsselstein (2010)		**What+Which**	Fiet (2000a)
Philpott et al. (2011)		**What + How + Which**	Lobler (2006)
Fenton & Barry (2011)			Kyro (2008)
Béchard & Grégoire (2005a)	**What**		Fayolle, Gailly & Lassas-Clerc (2006)
Mars & Rios-Aguilar (2010)			DeTienne & Chandler (2004)
Pittaway & Cope (2007)			Barbosa, Kickul & Smith (2008)
Haase & Lautenschlager (2011)			Laukkanen (2000)
Yusof & Jain (2010)			Graevenitz, Harhoff & Weber (2010)

No articles were found addressing the *Why* and *Whom* dimensions, suggesting that research on entrepreneurship education in the period 2000-2011 has fundamentally focused on contents, methodologies, and results. A variety of associations between multiple dimensions emerges from the articles: *How+What* (6 theoretical articles); *How+Which* (7 articles, 6 case studies and 1 empirical); *What+Which* (1 theoretical article); and *How+What+Which* (7 theoretical articles).

Table 4.7 breaks down theoretical and empirical articles, plus case studies, according to the single and multiple dimensions identified in the literature. Evaluation of results (*Which*) is at the center of researchers' concerns, being the main focus of the articles analyzed. With one exception, all empirical articles are concerned with evaluation of the results of entrepreneurship education programs (the sole exception is also concerned with teaching methods). Case studies are concerned primarily with methods (12 out of 13 articles focus on *How*). Results (*Which*) are also addressed, but not contents (*What*). Theoretical articles are distributed fairly evenly across dimensions: 14 out of 24 articles are concerned with either methodology (*How*), contents (*What*), or both, but not results (*Which*); seven articles address all three dimensions, while two are solely concerned with results (*Which*), and one focuses on both results and contents (*Which+What*).

Table 4.7. Breakdown between types of articles and dimensions of analysis

	Case studies	Theoretical	Empirical
How	6	3	-
What	-	5	-
Which	1	2	22
How+What	-	6	-
How+Which	6	-	1
What+Which	-	1	-
How+What+Which	-	7	-

Each of the dimensions identified in the literature is now addressed in turn.

How

This dimension is concerned with the description and analysis of methodologies. It is dominated by case studies, although there are also some theoretical articles. Fiet

(2000b) and Shepherd (2004) suggest different methodologies for implementation in the classroom to improve the effectiveness of entrepreneurship education. Fiet (2000b) argues that an entrepreneurship course should have theory and moments to put this theory into practice through a student-approved system. Shepherd (2004) stresses that failure is an important source of learning for entrepreneurs and concrete examples are presented of how to apply a specific pedagogy in the classroom. Blenker, Korsgaard, Neergard and Thrane (2011) present four paradigms for entrepreneurship teaching where a new paradigm emerges: *everyday practice*, related with the promotion of an entrepreneurial mindset.

Case studies often address how university curricula and teaching can become more entrepreneurial. Etzkowitz, Webster, Gebhardt and Terra (2000) compare different countries and areas (USA, Latin America, Europe and Asia) showing that a concept of the entrepreneurial university has emerged and that it is a global phenomenon with an isomorphic developmental path. Other cases focus on examples of good practices in different countries, such as: Miclea (2006) at Babes-Bolyai University, in Romania; Stankovic (2006) at University of Novi Sad in Serbia; and, Rasmussen and Sorheim (2005) at Swedish Universities.

Clarke and Underwood (2011) introduced volunteering opportunities into business ethics and enterprise modules and students have developed and applied discipline knowledge to real-life entrepreneurial cases. Carey and Matlay (2011) examine four elements influencing the methodology of entrepreneurship teaching: the assessment of entrepreneurial ideas; relationships in the context of subject discipline; the emergence of online social media in pedagogy; and the roles of risk and responsibility in the assessment and support of business ideas.

What

The dimension focusing on contents is dominated by theoretical articles. Béchard and Grégoire (2005a), Pittaway and Cope (2007), Mars and Rios-Aguilar (2010), and Yusof and Jain (2010) analyze different theories, contents, concepts and themes within the field of entrepreneurship education, while Haase and Lautenschlager (2011) emphasize

different contents and competences that should be developed by entrepreneurship training programs. Addressing theoretical and conceptual knowledge in entrepreneurship education, Béchard and Grégoire (2005a) report that the literature in this area is articulated around four major types of education preoccupations: social and economic roles of entrepreneurship education; systematization; content and methodologies; and the needs of individual students in structuring teaching interventions. Pittaway and Cope (2007), based on a systemic and holistic perspective, develop a thematic framework for entrepreneurship education where key areas for empirical research in the field are highlighted: general policy climate for entrepreneurship education; general enterprise infrastructure; contextual factors and approaches. Mars and Rios-Aguilar (2010) propose a framework for strengthening the application of entrepreneurial models to higher education that is based on the theoretical constructs of entrepreneurship in the economics and management literature, such as disruption, innovation and value creation. Yusof and Jain (2010) address the concept of entrepreneurial university: a university that practices academic entrepreneurship, facilitating and encouraging university technology transfer between the university and the industry. Haase and Lautenschlager (2011) argue that there is a *teachability dilemma* in the field of entrepreneurship education, because, while entrepreneurial *know-how* is recognizably important, it is also very difficult to teach, since the experience-based soft skills related to the entrepreneurship field are much difficult to develop without lengthy, hands-on experience.

Which

The *Which* dimension is dominated by empirical articles that focus on the assessment, analysis and examination of results from various kinds of programs and initiatives within the field of entrepreneurship education, as well as the analysis of the evolution of the field. Addressing academic entrepreneurship, Klofsten and Jones-Evans (2000) conclude that there is considerable entrepreneurial experience among Swedish and Irish academics involved with industry and this is translated into a high degree of involvement in *soft* activities such as consultancy and contract research, but not into organizational

creation via technology spin-offs. Lee and Rhoads (2004) report variations of teaching commitment with respect to disciplinary fields and forms of entrepreneurial activities. Analyzing the development of a European entrepreneurial university, Philpott, Dooley, O'Reilly and Lupton (2011) report a split between disciplines: science, engineering and medicine support the entrepreneurial university, while arts, social science and business do not.

The state of entrepreneurship education in different countries and the institutionalization of the field as part of the curriculum and research within schools of business and management is a concern shared by several authors. Finkle and Deeds (2001) analyze the institutionalization of the field in the USA, reporting increases in both the demand for and the supply of entrepreneurship faculty in the period from 1989/90 to 1997/98. Nine years later, Finkle (2010) finds an increase of university positions in entrepreneurship from 1989/90 to 2007/08, suggesting that the field of entrepreneurship is becoming more institutionalized. Redford and Trigo (2007) identifies two trends in the emergence of entrepreneurship education in Portugal: the teaching of entrepreneurship subjects at different institutions and the establishment of entrepreneurship centers. This development has appeared as a response to market needs and the lecturers' interest in addressing this subject matter. Empirical studies supported by the German Association for Promoting Academic Entrepreneurship Research (FGF) have originated several articles assessing the emergence and establishment of entrepreneurship education in Europe. Klandt (2004) analyzes the implementation of professorships across Europe, while Klandt and Volkmann (2006) examine the establishment of entrepreneurship chairs in Germany.

Some studies look at the effectiveness of different methodologies in entrepreneurship education. Solomon (2007), reports that entrepreneurship training has improved through the use of new technologies, such as the internet. Comparing results for different methodologies, Dutta, Li and Merenda (2011) suggest that depth or specialization of entrepreneurship education is not enough for wealth creation from future entrepreneurial activities; instead, it is the breadth or diversity of educational experiences that positively influences future wealth creation. In what concerns to

teaching materials, there is a gap between practice and what is taught to entrepreneurship students and entrepreneurship texts do not emphasize enough the activities that enhance the probability of starting a new venture (Edelman, Manolova& Brush, 2008). Fenton and Barry (2011) analyze the efficacy of entrepreneurship education, concluding that individuals benefit from entrepreneurship education mainly at graduate level, when it is more meaningful, engaging and applied.

Other studies are concerned with the effect on entrepreneurship education on entrepreneurial intentions, attitudes, propensity, and motivations. Rodrigues, Raposo, Ferreira, and Paço (2010) find that education was the most influential factor increasing propensity for new venture creation among Portuguese students, and that personal characteristics have an important role in shaping motivation, while perceived hurdles have a negative impact on intentions. Sánchez (2011) finds that students who participated in an entrepreneurship training program increased their competences (self-efficacy, pro-activeness, risk-taking), and intentions towards self-employment. Lanero, Vázquez, Gutiérrez, and García (2011) observe a positive effect of education on perceived entrepreneurship feasibility, which in turn affects entrepreneurial intentions and behavior positively. Still analyzing intentions, but with different results, Oosterbeek, Praag, and Ijsselstein (2010), report that a mandatory entrepreneurship education program had a significantly negative impact on entrepreneurial intentions and no impact on entrepreneurial skills. Lena and Wong (2003) argue that the application of entrepreneurship programs per se is not enough to promote entrepreneurial intentions; a positive attitude towards those programs is also important. Teixeira (2010) finds that students who have business-related competences and live in an environment that fosters entrepreneurship have more positive attitudes toward entrepreneurship education. Shinnar, Pruet, and Toney (2009) report that past experience and technological knowledge provides greater motivation towards entrepreneurship training. Kourilsky and Walstad (2002) find that motivation is positively related with the realization of dreams and desires.

Cultural differences are also deemed to impact the results of entrepreneurship education. Analyzing the impact of entrepreneurship education in the USA and Korea,

Lee, Chang, and Lim (2005) conclude that such impact is much greater in Korea than in the USA, probably due to the fact that in the USA there is a more entrepreneurship-oriented culture. In the same vein, Giacomin et al. (2011) report that American, Asian and European student entrepreneurial dispositions and intentions differ by country, but students across countries are motivated and/or discouraged by similar variables. However, in another study, Kirby and Ibrahim (2011) find that the entrepreneurial propensity of Egyptian students is higher than that of their UK counterparts.

Katz (2003) and Kuratko (2005) examine the evolution, impact, and future challenges of the entrepreneurship education field. Katz (2003) finds that in the USA the field has reached maturity, even though there exists a shortage of faculty, exacerbated by a shortage of specialized PhD programs. Kuratko (2005) proposes some main trends and challenges in entrepreneurship education for the 21st century of which the more important are: the maturity/complacency/stagnation trap; the research/publications dilemma; and the faculty pipeline shortage.

How+What

This dimension is dominated by theoretical articles that, besides focusing on theories and scientific knowledge of the field, also explain how a given theory is applied, through the presentation of programs, models, methods and frameworks. Boyle (2007) develops a model of entrepreneurship education at the university level that includes entrepreneurial retreats for the development of entrepreneurial thinking, new curricula, and individualized entrepreneurial prescriptions, apprenticeships and opportunity centers, focusing on the development of the individual, more than on the dissemination of knowledge. Honig (2004) introduces two alternative experiential models: a model of entrepreneurship education (focus on cognitive team experiences/simulations in learning opportunities based on failure and convergent thinking), and a contingency model of business planning education (based on assimilation, accommodation and divergent thinking). Hjorth (2011) proposes a model of provocation-based entrepreneurial entrepreneurship education (the E3 model) that supports learning as a social creation process. Focusing primarily on methods, Neck and Greene (2011) present

a model based on a portfolio of techniques to practice entrepreneurship and to encourage creating.

Other articles propose theoretical frameworks for entrepreneurship education. Fayolle and Gailly (2008) propose a framework composed of two levels, ontological and educational, combining the concepts of teaching models and learning, and apply it to specific entrepreneurship education situations. Woollard (2010) develops a theoretical framework where university entrepreneurship is an organizational process within an entrepreneurial system described as an input-process-output model with feedback effects.

How+Which

This dimension is dominated by case studies that focus on the presentation of different methodologies and programs, assessing and analyzing their impact. All methodologies and programs here presented had positive results for students and, in some cases, for industry. Heinonen, Poikkijoki, and Vento-Vierikko (2007) report a case of the development of a specific entrepreneurship education program in Finland, based on an entrepreneurial-directed approach that was used to support and motivate students to increase their potential in an entrepreneurial context. Papayannakis, Kastelli, Damigos, and Mavrotas (2008) present the experience of the Greek National Technical University in introducing entrepreneurship education in engineering curricula, emphasizing the need to develop an interdisciplinary approach in designing these curricula, where engineering and non-engineering factors interact. Programs of enterprise education and technology transfer at the University of Cambridge are examined by Hyclak and Barakat (2010), focusing on the mission of the Centre for Entrepreneurial Learning (CfEL) to develop education programs that reflect the needs of nascent high-tech entrepreneurs.

Harkema and Schout (2008) report the case of the Centre of Excellence in Innovation & Entrepreneurship at the University of Professional Education in The Hague. This Centre offers a competence-based program based on a constructivist perspective and learner-centered theories, where students are stimulated to create their own goals. B Bonnet, Quist, Hoogwater, Spaans, and Wehrmann (2006) present a new subject for

undergraduate engineering students focused on entrepreneurship and sustainability. Bager (2011) reports a study of three different camps in Denmark where team building, creativity training, and innovation boosting are emphasized.

One empirical article assesses the effects of existing entrepreneurship education programs on entrepreneurial intentions and proposes a novel methodological approach. Liñán, Rodríguez-Cohard, and Rueda-Cantuche (2011), find that personal attitude and perceived behavioral control (perceived feasibility) are the most relevant factors explaining entrepreneurial intentions, but start-up decisions also depend on the "entrepreneurial orientation" of the individual and not just on perceived feasibility and desirability.

What+Which

Only one theoretical article was found joining the contents and evaluation dimensions. Before focusing on the use of theories, assumptions and scientific knowledge in the field of entrepreneurship education, Fiet (2000a) examines the state of entrepreneurship theory using a survey of entrepreneurship courses offered in higher education. This author argues that researchers have developed separate theories instead of using previous theories, and suggests several opportunities to build cumulative theory into entrepreneurship courses. He also presents a contingency approach for teaching entrepreneurship.

How+What+Which

Seven theoretical articles in our sample address all three dimensions concerning methodologies, contents, and performance assessment. Some of these articles propose frameworks/models of entrepreneurship education based on scientific knowledge, describe their implementation and the criteria for evaluation of their applicability (DeTienne& Chandler 2004; Fayolle, Gailly, & Lassas-Clerc, 2006; Kyro 2008; Graevenitz, Harhoff, & Weber, 2010). Other articles present contents and methodologies for

entrepreneurship education programs with an informal evaluation (Laukkanen 2000; Lobler 2006; Barbosa, Kickul, & Smith, 2008).

Fayolle et al. (2006) develop a framework to assess and improve the design and execution of entrepreneurship education programs, linking characteristics of the program to outcomes related with attitudes and intentions. The impact of the program is assessed based on the impact on participants' attitudes and intentions. Results suggest that this methodology is consistent. DeTienne and Chandler (2004) contend that opportunity identification is a competency that can be developed in the entrepreneurship classroom through a specific training intervention model based on "generativity" theory, where students generate more innovative ideas for business opportunities. Kyro (2008) contributes to the competency-based approach in entrepreneurship education by developing a framework that combines learning and teaching for fostering individual meta-competences. Graevenitz et al. (2010) develop and test a model of learning in which entrepreneurship education generates signals to the students, allowing them to evaluate their aptitude for entrepreneurial tasks. It is concluded that entrepreneurship courses induce sorting and that entrepreneurship education may not always lead to stronger entrepreneurial intentions.

Laukkanen (2000) conceptualizes the university as a regional mechanism, suggesting a model implying a shift of mindsets or paradigms towards a business generating strategy aiming to nurture local conditions for new ventures and for strategic expansion of SMEs. Lobler (2006) develops a theoretical base for entrepreneurship education deriving principles stimulating the promotion of a self-governed learning process, are derived. Based on the constructivist approach and the "out of school learning environment," this perspective is in line with Fiet (2000b) and with the contingency model of business planning education by Honig (2004). Finally, Barbosa et al. (2008) show how to develop an educational program in entrepreneurship aimed at helping students increase entrepreneurial cognition and risk taking by developing both the intuitive and the analytic sides of student's cognition, combining "traditional" classes and experiential learning.

4.4.2 How Different Journals focus on the Framework's Dimensions.

Table 4.8. Distribution of journal articles according to the framework's dimensions

Type	Journal Name	How	What	Which	How + what	How + Which	What + Which	How + What + Which
Business and Management	Entrepreneurship & Regional Development				1			1
	Entrepreneurship Theory & Practice			1				
	European Economic Review			1				
	International Entrepreneurship Management Journal		2	5		2		
	International Journal of Business and Globalization							1
	International Journal of Entrepreneurship & Small Business			1				
	International Journal of Entrepreneurship Education			1				
	International Review on Public and Nonprofit Marketing			1				
	International Small Business Journal		1					
	Journal of Business Venturing	1		2			1	
	Journal of Economic Behavior & Organization							1
	Journal of Enterprising Culture			1				1
	Journal of Small Business and Enterprise Development			1				
	Journal of Small Business Management				1			
	Research in Business and Economics Journal			1				
	Research Policy	1						
	Silicon Valley Review of Global Entrepreneurship Research			1				
	Small Business Economics			1				
	Technology Analysis & Strategic Management							1
	Technovation	1		1				
Education and Educational	Academy of Management Learning & Education	1	1	2	1			1
	European Journal of Education					1		
	European Journal of Engineering Education					2		
	Higher Education		1					
	Higher Education in Europe	2		1				
	Industry & Higher Education	3		2	2	2		
	Journal of Education for Business			1				
	Journal of European Industrial Training				1			1
	Research in Higher Education			1				

Table 4.8 examines the extent to which different journals addressed the single and multiple dimensions in the framework of analysis. The coverage of multiple dimensions is a concern shared by both business and management, and education journals.

The *International Entrepreneurship Management Journal and Industry & Higher Education* are the ones that address a greater variety of dimensions, followed by *Academy of Management Learning & Education*, *and Journal of Business Venturing*. It seems that the main trend in the journals of our sample is to focus on one dimension or one association of dimensions. The *Which* dimension is the most represented in the different journals, while the *What+Which* is the less represented.

4.5 Discussion

The present study aims to systematize and structure the theoretical and empirical insights produced in the period 2000-2011 on the subject of entrepreneurship education, and to analyze the main challenges and emerging solutions in the entrepreneurial classroom. With regard to the first purpose, the contents of entrepreneurship education literature are systematized based on a framework built upon the works by Mialaret (2005/1976), Béchard and Grégoire (2005b), and Fayolle and Gailly (2008). Articles in the literature are found to concentrate on three main dimensions of analysis: contents (*What*); methodologies (*How*), and evaluation of results (*Which*). While the greater proportion of articles are solely concerned with the results dimension (25 out of 60), a significant number of articles (21 out of 60) address multiple dimensions simultaneously.

Articles addressing solely the results dimension (*Which*) are almost exclusively empirical, making no attempt to build theory, and concentrating instead on applying criteria developed in previous literature (such as, for instance, entrepreneurial intentions) to evaluate practices in new contexts. Articles that address more than one dimension are the most complete in scientific terms, as they tend to propose new theory and test it, expanding the knowledge in the field more significantly and consistently.

The large emphasis on the results dimension may be due to the low maturity of the field, meaning that there is still a lack of a unified paradigm, and a need to justify the value and impact of entrepreneurship education in academic and policy making quarters. Research on entrepreneurship education has evolved from a field (entrepreneurship) with low paradigm development. For instance, Béchard and Grégoire (2005a) point to the lack of established paradigms in theory development in the field of entrepreneurship while Ireland et al. (2005) claim that in general, entrepreneurship research is characterized by low paradigm development. Busenitz et al. (2003, p.237) find that, in the field of entrepreneurship, "no powerful unifying paradigm exists, nor do multiple coherent points of view." In low paradigm fields of research it is sometimes difficult to build theory and even to discern whether the work produced is theory, because theory-building is a continuum and it can take a variety of forms (Weick, 1995). This helps explain why authors have focused on assessing and analyzing results from different approaches, attempting to determine the conditions and practices that lead to successful entrepreneurship education programs.

Two dimensions in the proposed framework have not been directly addressed by the main articles in the recent literature: *Why* (objectives), and For *Whom* (audience). This feature is common to articles selected and excluded from the sample, except for some introductions to special issues. Articles do not consider as their main focus the aims of education programs or the characteristics of the target audience. Audience characteristics do play a role in influencing the quality of the results of entrepreneurship training as assessed in various articles, but this is not the main subject of those articles. Objectives of specific programs are sometimes explained or illustrated as a means to establish criteria for evaluation, but they are not at the center of the articles' arguments, nor are they the object of theoretical formulation.

This finding is not in line with Béchard and Grégoire's (2005a) results, who emphasize social preoccupations (related with the role and function of educational objectives) and *personalist* preoccupations (related with the individual/audience characteristics). This disparity could be due to the different chronological periods addressed by the analysis (their analysis period ends in 2002) and may reflect the

development of the field, as it has moved on from focusing on the more fundamental dimensions associated with aims and audiences for entrepreneurship education towards an emphasis on assessment of programs and figuring out under which practices and conditions entrepreneurship education is more likely to be successful.

Within the context of this greater emphasis on results, one issue that seems to require more analysis and focus is the definition of criteria and the characterization of the measurement tools. Criteria used across different articles range from assessing changes in entrepreneurial intentions to identifying improvements in entrepreneurial skills and ability.

Measurement tools are not fully explained, particularly in case studies, and vary considerably in their degree of sophistication, which limits the comparison of results. This finding is in line with Fayolle and Gailly (2008), who argue that effective measurement is one of the issues and challenges regarding the assessment of programs. Measures, instruments and validation procedures are some of the limitations that need to be addressed in future research.

In what concerns the contribution of entrepreneurship education research towards classroom practices, this study finds that there is not a consistent body of knowledge or a common framework in entrepreneurship education, which conditions the recommendations of best practices for entrepreneurship educators to adopt. Most articles present specific cases/programs with best practices that work in a specific context, but provide no evidence that these practices may be extended towards a universal approach. Indeed, there is no unequivocal, generalizable evidence on successful practices that might be applied in a widespread variety of contexts. Pedagogical approaches and methods are still, to a large extent, dependent on the objectives, setting, and audience. The best approach for practitioners is to examine the literature and pick out proven strategies and best practices that apply to their specific case.

The fundamental question to be asked of any examination of entrepreneurship education is: “What we have learned and what has emerged as useful in the entrepreneurial classroom?”. While the adoption of consensual guidelines in

entrepreneurship education will probably remain a challenge over the next years, it is possible to summarize some main insights.

Table 4.9 summarizes the main insights identified in the literature.

Table 4.9. Main Insights into best practices for entrepreneurship educators

What emerges from (and for) the entrepreneurial classroom?	
Best practices and strategies that entrepreneurship educators should promote:	
1.	Experiential learning, rather than the transmission of knowledge;
2.	Diversity of educational experiences;
3.	Learner's active participation and students-approved system to enhance student motivation in the learning process;
4.	Multidisciplinary approaches;
5.	Direct participation of experienced entrepreneurs in training programs;
6.	Experience of failure in the learning process;
7.	Risk, responsibility and opportunity identification training;
8.	Individual meta competences;
9.	Contingency and constructivist approaches;
10.	The use of the internet/online social media;
11.	A portfolio of techniques to practice entrepreneurship;
12.	Adapt the programs to cultural context;
13.	Entrepreneurial environment, mindsets and attitudes.

Theoretical and empirical articles centered on the development and evaluation of methods, programs and new theories or frameworks indicate that entrepreneurship education programs can be built and assessed through frameworks founded on the Theory of Planned Behavior (Ajzen, 1991). Also, individual entrepreneurial competences and opportunity recognition can be developed in the classroom through specific intervention models that emphasize process-based learning and project development. However, while it seems clear that entrepreneurship education enhances entrepreneurial competences, it may not always lead to stronger entrepreneurial intentions.

4.6 Concluding Remarks

The booming pursuit of entrepreneurship education over the last few decades has attracted a growing interest in entrepreneurship education research, leading to an increasingly rich field of study, although characterized by some inconsistency of the body of knowledge. Following a period where articles have addressed issues such as the

aims and audience of entrepreneurship education programs, research on this subject over the period 2000-2011 has mostly sought to evaluate the results of entrepreneurship education initiatives, often in terms of either changes to entrepreneurial intentions or changes to entrepreneurial skills and abilities. Some articles propose new theories about contents and/or methodologies and examine their results in experimental settings. Such articles are more likely to provide significant advances to the literature through the identification of specific features about contents, methodologies, and specific audiences that may contribute to the success of entrepreneurship education programs.

At this stage of development of the field there is still a strong desire to test and change reality, proposing new practices, rather than changing ideologies and criticizing existing structures. Probably when the field is more consolidated and institutionalized there will be a shift in focus towards a greater refinement and a clearer emphasis on concepts and processes directly associated with entrepreneurship education. The fact that learning and socio-economic objectives, as well as audience characteristics, seem to be neglected in the literature is relevant to policy makers and those involved in educational governance.

The trend towards articles approaching multiple dimensions of the entrepreneurship education phenomenon by proposing and testing new theory has been pursued in particular by two journals – *Industry & Higher Education* and *Academy of Management Learning & Education* – and sporadically by a variety of journals in business/management and economics. Among the latter, the *International Entrepreneurship Management Journal* has contributed most to the literature, but has done so mostly through the publication of empirical articles focusing on the evaluation of the results of entrepreneurship education initiatives.

This study contributes to the literature in several ways. It extends theory development in the field of entrepreneurship education by: showing how different perspectives can be integrated into a common framework of analysis to systematize the literature, allowing for comparisons and evaluations of the state of the field; highlighting the main focus areas of research on entrepreneurship education, their evolution, and

main gaps to be addressed; and presenting the main insights and challenges for entrepreneurship education research to improve the practices in the entrepreneurial classroom. The adoption of a methodology to systematize contents of the literature has also the potential to be used further to address trends and gaps in other literature streams, and as a benchmark to assess future developments in research on entrepreneurship education.

The analysis presented here is not exempt from limitations. While the search for articles was carried out with the objective of covering the widest possible range of studies integrating theory and empirical analyses, it has eliminated a variety of studies that address issues indirectly related with entrepreneurship education, such as articles on entrepreneurial skills and human capital. While the framework of analysis used to assess contributions is very flexible, allowing for articles to address multiple dimensions of analysis, the APA classification of articles into theoretical, empirical, and case studies is somewhat limited, as some articles proposing new theory also test it empirically, allowing for greater expansion of knowledge in the field, while others are limited to theory development.

Also, the framework does not address the intrinsic value of empirical results. Empirical articles contribute differently to the field as some provide detailed analysis of experimental conditions and evaluation criteria, addressing issues as selection and endogeneity (such as, for instance, Oosterbeek et al., 2010), while in others the results are conditioned by issues and data and methodology. The increasing search by scholars for assessment of the results of different strategies of entrepreneurship education represents a progress in the field. However, there are still several gaps and challenges to overcome. These are highlighted in Table 4.10, which also points to possible solutions to overcome the existing challenges, which may be seen as avenues for further research.

In spite of these limitations, it is believed that the systematization of literature provided here complements previous reviews and allows for easy reference that can be useful for management and education researchers and practitioners.

Table 4.10 Main challenges and solutions to overcome those challenges

Main challenges that still remain	Solutions to overcome those challenges
Reduced uniformity in the programs offered → Lack of consistency in the practice of entrepreneurship education;	Instead of creating whole new programs, use previous and already developed programs and build upon them, testing the effects of incremental changes;
The lack of unification and the reduced detail and characterization of the criteria and measurement tools used to assess the results of entrepreneurship education, which may cause problems of replication, validity and generalization of results;	Provide more details of criteria and use developed and validated tools/frameworks;
Empirical testing of theoretical propositions (e.g. entrepreneurship education programs, methods or strategies);	Develop more experimental evidence confronting the new theories proposed and those that already exist in order to assess their validity;
Entrepreneurship texts;	Improve and reduce gaps between theory and practice;
Fragmented theories;	Build cumulative theories;

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Empirical Study 1

Theory of Planned Behavior and Entrepreneurial Intentions of Sport Sciences Students: Implications for Curriculum Design and Teaching

Abstract

This study tests Ajzen's (1991) Theory of Planned Behavior (TPB) in the context of sport sciences with the purpose of determining which variables most influence students' entrepreneurial intentions. Although this theory has been widely employed to predict and explain entrepreneurial intentions in different contexts, the context of sport sciences has not been addressed. The research applies the Entrepreneurial Intentions Questionnaire (Liñán & Chen, 2009) to a sample of 379 sport sciences students, aged from 18 to 41 years (21.3±3.2) and uses structural equation modeling. Results indicate that TPB psychometric properties are satisfactory, and the application of the model is partly corroborated in this sample, since both perceived attitudes and perceived behavior control have significant positive impacts on entrepreneurial intentions, while the impact of subjective norms is negative and of small magnitude. The Theory of Planned Behavior explains 90% of the variance in entrepreneurial intentions. Attitudes to entrepreneurship are the strongest predictor in promoting entrepreneurial intentions, while subjective norms are the weakest. The models' invariance to gender and professional experience suggests that demographic variables have reduced influence on entrepreneurial intentions when compared with attitudes and perceived behavioral control. Several suggestions to improve curriculum design and teaching in order to promote entrepreneurial intentions and behaviors are provided.

Keywords:

Entrepreneurial Intentions, Sport Sciences, Theory of Planned Behavior, Curriculum Development.

5.1 Introduction

Entrepreneurship is a crucial feature of today's society and is associated with a capacity for innovation, initiative (Drucker, 2006) and creativity (Shane, Locke &Collins, 2003). The entrepreneurial process is based on the identification, evaluation and exploitation of opportunities for the creation and development of new business ideas (Krueger, 1993).

The present study focuses on individuals' intentions to engage in entrepreneurship. Intentions reflect a person's motivation to perform a behavior. The stronger a person's intentions and the greater her ability (behavioral control) the more likely that behavior is to occur (Ajzen, 1991). Krueger, Reilly and Carsrud (2000) argue that entrepreneurial activity can be predicted more accurately by studying intentions rather than personality traits, demographic characteristics, or situational factors. The present study, building upon Krueger's (1993, p.7) definition, defines entrepreneurial intentions "as the commitment to start a new business".

Evidence about the link between intentions and actions has been studied with respect to many different types of behaviors (Ajzen & Fishbein, 1980). Ajzen's (1991) Theory of Planned Behavior (TPB) provides a validated framework that explains entrepreneurial intentions consistently (Krueger et al., 2000). This theory states that much human behavior is planned and is therefore preceded by intention toward that behavior while intentions are predicted by perceived attitudes (PA), subjective norms (SN) and perceived behavioral control (PBC).

Despite increasing and widening exploration of entrepreneurial intentions (e.g. Souitaris, Zerbinati & Al-Laham, 2007), the field of sport sciences remains under-researched. While TPB has been frequently applied in sport (mostly to predict physical activity intentions and behaviors), to the best of our knowledge there are no empirical studies analyzing entrepreneurial intentions in sport sciences students. Also, most applications of TPB in the entrepreneurship field are based on samples of business populations. Recent research suggests there is value in analyzing the antecedents of entrepreneurial intentions in different groups (Krueger et al., 2000; Liñán & Chen, 2009).

Founded upon this motivation, the present study addresses the following research questions:

i. Based on the study's sample, does the Theory of Planned Behavior contribute to the explanation of entrepreneurial intentions of sport sciences students?
ii. Which factors determine entrepreneurial intentions of these students?
iii. Does the influence of TPB factors vary according to gender and professional experience?

The study is structured as follows. The next section reviews previous literature and presents the hypotheses to be tested. The third section describes the methodological approach. The fourth section presents the results of the cross-sectional study. The fifth section discusses the study's findings, emphasizing its main limitations, and proposes some guidelines towards improving entrepreneurial intentions in sport sciences students. Section 6 concludes.

5.2 Literature review and hypotheses

5.2.1 TPB and entrepreneurial intentions.

TPB (Ajzen, 1991) proposes that intentions are a function of three independent determinants: perceived attitudes, subjective norms and perceived behavioral control (Ajzen, 1991). The more favorable attitudes, subjective norms and perceived behavior control are, the stronger should be the intentions to perform that behavior. However, the importance of each of these predictors varies across behaviors and situations (Ajzen, 1991).

In the context of entrepreneurship, TPB asserts that entrepreneurial intention is dependent on an individual's attitude toward the desirability of an entrepreneurial career, on subjective norms including perceived family expectations and beliefs to perform the behavior, and on perceived behavioral control, i.e. the perceived ability to execute the intended behavior of entering entrepreneurship. According to Krueger and Carsrud (1993), venture creation is a planned and hence intentional behavior.

Perceived attitudes are a function of the beliefs held about a certain behavior, and the evaluation of the likely outcomes of adopting that behavior. Subjective norms refer to the individual's perception of whether other, significant people in their life would want them to perform the behavior, referring to the social pressure. Perceived behavior control refers to the extent to which individuals perceive that a certain behavior is under their volitional control and is related with the perceived ease or difficulty of performing that behavior, reflecting past experience as anticipated impediments and obstacles.

According to Ajzen (1987; 1991), perceived behavior control plays a key role in determining intentional behavior, while subjective norms are less predictive of intentions for subjects where there is a high internal locus of control. Empirical studies often find the subjective norm construct to be a weak predictor of intentions (e.g. Autio, Keeley, Klofsten, Parker, & Hay; 2001; Krueger et. al, 2000; Liñán & Chen, 2009). In some studies, this component has been removed from the analysis of intentions (e.g. Sparks, Shepherd, Wieringa & Zimmermanns, 1995). However, other research has found that subjective norms partly explain attitudes and self-efficacy (Liñán & Chen, 2009).The negative relation between this construct and entrepreneurial intentions it is not very frequent, although it can be verified in some studies (e.g. Shook & Bratianu, 2010).

An issue often raised regarding the predictive power of TPB is the existence of a gap between intentions and future behaviors. Several authors propose strategies to help close the *intention-behavior gap*, such as asking individuals to formulate goals and plans that involve specifying when, how, and where the performance of a behavior will take place (Gollwitzer, 1999). Ajzen, Czasch and Flood (2009) argue that the effectiveness of implementing intentions is related with the notion of commitment to perform the behavior.

5.2.2 Empirical research on TPB and entrepreneurial intentions.

TPB has been validated by several meta-analytic reviews which have provided strong support for its predictive ability (e.g. Armitage & Conner; 2001). However many TPB studies do not measure behavior and when they do it is usually through self-reports, which decreases its validity (Armitage & Conner, 2001). We still found studies from

different fields (e.g. Doll &Ajzen, 1990) which presented a high percentage of variance explained ($R^2 = 0.88$).

TPB has been frequently applied in sports science, more specifically in the study of lifestyles and in the analysis of physical activity and exercise intentions and behaviors (e.g. Hagger et al., 2007).

Several authors have analyzed entrepreneurial intentions (e.g. Autio et al., 2001; Krueger, 1993; Krueger & Brazeal, 1994; Krueger et al., 2000; Petterman & Kennedy, 2003; Tkachev & Kolvereid, 1999; Veciana, Aponte & Urbano, 2005). Ajzen´s (1991) model has been widely used in entrepreneurial research, and especially amongst student populations of different countries: USA (e.g. Krueger, 1993; Krueger et al., 2000; Autio et al., 2001); Finland and Sweden (Autio et al., 2001); UK (Autio et al., 2001); France (Fayolle, Gailly & Lassas-Clerc, 2005); Romania (Shook & Bratianu, 2010); Russia (Tkachev & Kolvereid, 1999); Spain and Taiwan (Liñán & Chen, 2009); and Portugal (Rodrigues, Dinis, Paço & Ferreira, 2008). Most results have been consistent with the validity of TPB predictions but, according to Liñan and Chen (2009), the applicability of the TPB to entrepreneurship is sometimes limited by measurement issues.

Empirical evidence suggests that males are likely to have higher entrepreneurial intentions and behaviors than females (e.g. Matthews & Moser, 1995). According to these authors, professional experience is also a variable that influences positively entrepreneurial intentions and behaviors.

5.2.3 Sport sciences and entrepreneurship.

Like entrepreneurship, sport is also an important economic and social driver of development around the world (Ratten, 2011). Sport sciences are a multifaceted and multidisciplinary field where different scientific perspectives and research questions emerge (Neumaier, 2003). Sports entrepreneurs are people or organizations related with sport that innovate in business procedures, creating something different from what has been done before (Ratten, 2011). Some studies have investigated the link between entrepreneurship and sports focusing on different issues: development of human capital and competitive sports (Krueger & Neergaard, 2012); entrepreneurial strategies and

brand management theories (Miloch, Lee, Kraft & Ratten, 2012), among others. However, no studies were found addressing entrepreneurial intentions of sport sciences students or graduates.

Hypotheses to be tested

Based on the TPB predictions and literature, the following hypotheses are presented:

- **Hypothesis 1:** There is a positive relationship between perceived attitudes (PA) and entrepreneurial intentions in sport science students;
- **Hypothesis 2:** There is a positive relationship between subjective norms (SN) and entrepreneurial intentions in sport science students;
- **Hypothesis 3:** There is a positive relationship between perceived behavior control (PBC) and entrepreneurial intentions in sport science students.
- **Hypothesis 4:** The factorial structure of the TPB's model is not invariant according to gender;
- **Hypothesis 5:** The factorial structure of the TPB's model is not invariant according to professional experience.

5.3 Method

5.3.1 Participants and data collection.

Participants were selected from the Faculty of Human Kinetics (FHK), the oldest Sports and Physical Education school in Portugal. A convenience sample of 379 students agreed to participate voluntarily in this study: 63.5% are men and 36.5% women; ages of the respondents ranged from 18 to 41 years, (21.3±3.2). In what concerns the different majors, 85.8% are from Sport Sciences (Exercise and Health, Sport Coaching and Physical Education) and 14.2% from Sport Management. Questionnaires were administrated in class, during the month of May 2011 with prior permission from the lecturer. Students were briefed on the purpose of the study by the researcher and then asked to voluntarily fill in the standard entrepreneurial intentions questionnaire (EIQ), being given about 20

minutes to complete it. The EIQ is based on the existing theoretical and empirical literature about the application of Ajzen's Theory of Planned Behavior to entrepreneurship and it was developed by Liñán and Chen (2009) to measure entrepreneurial intentions and other variables related with that model.

5.3.2 Instrument and measures.

The EIQ was translated into Portuguese and back-translated to English to ensure the accuracy between the original scales and the necessary translated versions (Redford & Veloso, 2007). In this study we used the Entrepreneurial Activity scale (EIQ v.3.2) which is composed of 20 items that correspond to the elements in the entrepreneurial intention model. All items were measured using a Likert-type scale, ranging from 0 (*not at all*) to 7 (*totally).* In this scale we have the following constructs: *Entrepreneurial Intention* (EI) (items A4, A6, A9-reversed, A13, A17 and A19-rev); *Perceived Behavior Control* (PBC) (items A1, A5-rev, A7, A14, A16-rev, A20); *Personal Attitudes* (PA) (items A2-rev, A10, A12-rev, A15 and A18); and *Subjective Norms* (SN) (A3, A8, A11).

5.3.3 Data analysis.

In the first stage of the analysis, a two-step maximum likelihood structural equation modeling procedure was performed. First, a confirmatory factor analysis (CFA) was conducted to evaluate the measurement models. The reliability of the construct was assessed through the Composite Reliability (CR).[1]

The average variance extracted (AVE) was estimated to evaluate convergent validity and values larger than 0.50 were considered to demonstrate convergent validity (Hair, Black, Babin, Anderson, & Tatham, 2005). Discriminant validity was assumed when the AVE of each construct was larger than the squared correlation between that construct and any other (Fornell & Larcker, 1981).

[1] Values of CR larger than 0.7 indicate a good reliability (Fornell & Larcker, 1981).

A structural model estimation was then performed to test the research hypotheses. The appropriateness of the data to both the measurement and structural models was estimated through a variety of goodness-of-fit indices. Specifically, a good fit of the models was assumed when the ratio of χ^2 to its degrees of freedom was less than 3.0, and comparative-of-fit-index (CFI) and the goodness-of-fit-index (GFI) were larger than 0.90 (Hair et al., 2005). A root mean square error of approximation (RMSEA) value less than 0.06 was considered as indicative of good fit (Maroco, 2010) while an acceptable fit was assumed for values between 0.08 and 0.10 (Byrne, 2000). The significance of the structural weights was evaluated using Z-tests.[2]

In the second stage of the analysis, multi-group analyses were conducted to examine whether the measurements and structural model vary across groups (according to gender and professional experience). The model's invariance was tested by comparing the unconstrained model with the model constraining the structural weights (Loehlin, 2003). The significance of the structural weights was evaluated using the Z-tests produced by AMOS and statistical significance was assumed at a .05 level.

5.4 Results

5.4.1 Measurement model.

None of the variables presented asymmetry coefficients indicating severe violations of the normal distribution (|Sk<3| and |Ku<7|) which would recommend against SEM with maximum likelihood estimation (Maroco, 2010). The results of the CFA showed that the factor loadings from three items of PBC (A5, A16, A20) and another from PA (A18) failed to exceed the cut-off point of 0.50 and, consequently, were eliminated (Hair et al., 2005).

All remaining items showing high factor loadings, ranging from 0.604 to 0.869, while the Z-values ranged from 11.403 to 20.893 ($p < .001$) – see Table 5.1.

[2] *Statistical significance was assumed at a .05 level*

Table 5.1. Individual loadings, Z-values, composite reliability (CR), and average variance extracted (AVE)

Variables	Loadings	Z-value	CR	AVE
Perceived attitude				
A2	.680	14.367	.90	.70
A10	.778	17.278		
A12	.764	16.838		
A15	.808	18.271		
Subjective norms				
A3	.692	13.770	.87	.69
A8	.709	14.157		
A11	.846	17.276		
Perceived behavioral control				
A1	.604	11.403	.78	.54
A7	.693	13.368		
A14	.640	12.214		
Entrepreneurial Intentions				
A4	.725	15.942	.93	.70
A6	.783	17.783		
A9	.655	13.928		
A13	.869	20.893		
A17	.715	15.644		
A19	.798	18.296		

These results indicate that each item did load significantly on its construct. All the constructs showed good reliability (CR), ranging from 0.78 (PBC) to 0.93 (EI) and convergent validity (AVE), ranging from 0.54 to 0.70. Convergent validity was accepted given that AVE values ranged from 0.54 to 0.70. Evidence of discriminant validity was confirmed because none of the squared correlations between constructs (0.16-0.33) exceeded the AVE values for each construct.

The final measurement model consisted of 16 items, with three items reflecting the PBC and SN constructs, while four items reflected PA and six reflected EI. The results obtained in the final measurement model indicated an acceptable fit to the data [χ^2 (98) = 333.985 ($p<.001$); $\chi^2/df=3.408$; CFI=0.923; GFI=0.903; RMSEA=0.080)]. The χ^2 statistic was significant ($p<.001$), however, its ratio to the degrees of freedom was within the usually accepted range. Also, it is important to consider other indices given that the χ^2 statistic is overly sensitive to sample size (Hair et al., 2005; Maroco, 2010). Both CFI and GFI values met the recommended criteria for good fit, while RMSEA and χ^2/df were indicative of acceptable fit. Overall, the final measurement model was clearly within the

required criteria for good psychometric properties. Consequently, the structural model was examined.

5.4.2 Structural model.

The hypothesized TPB model fitted to the study sample is presented in Figure 5.1**.** In this model all the coefficients are significant at p<.001. The model explains 90 per cent of the variations in intentions.

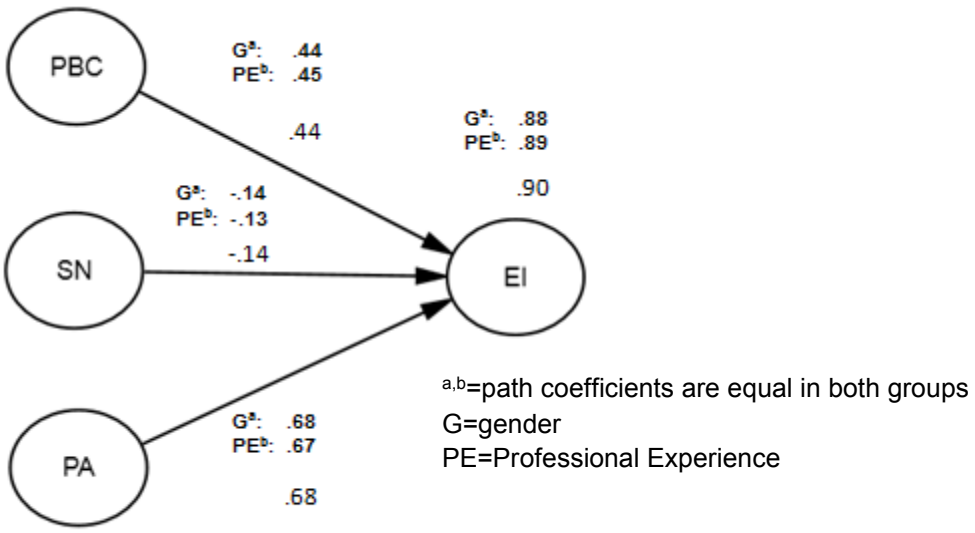

Figure 5.1 Structural Model of TPB used in the study (adapted from Ajzen, 1991)

Perceived attitude emerges as the most important predictor of entrepreneurial intentions in this sample. Perceived attitude has a strong, positive and significant effect on entrepreneurial intentions (β=0.68; p<.001). Thus, H1 is supported by the study.

Perceived behavioral control also showed a positive and significant effect on entrepreneurial intentions (β=.44; p<.001), and consequently H3 is also supported.

Subjective norms present a negative significant effect on entrepreneurial intentions (β=-0.14, p=<.001). However, according to Chin (1998) coefficients below 0.20 should not be considered relevant because they explain too low a percentage of

variance. Regardless, H2 is not supported by the study, so the model is only partially corroborated.

5.4.3 Multi-group analysis.

In addition, the comparison between the path coefficients in the models based on gender (G) and professional experience (PE) is presented in Figure 5.1. Both the measurement and structural models were stable in male and female participants, thus H4 is not supported. The same occurs for participants with and without professional experience, so H5 is also not supported by the study.

5.5 Discussion

5.5.1 Examination of the results.

The main purpose of this study was to understand which variables most influence entrepreneurial intentions of sport sciences students in a specific context by testing the predictions associated with the theory of planned behavior. Results indicate that TPB psychometric properties are satisfactory, and the application of the model is partly corroborated in this sample, since both perceived attitudes and perceived behavior control have significant positive impacts on entrepreneurial intentions, while the impact of subjective norms is negative and of small magnitude. Surprisingly, no significant differences were detected between males and females, or according to professional experience. In sum, findings suggest that students who have stronger positive attitudes towards entrepreneurship, as well as those with higher perceived control over their actions will likely have stronger entrepreneurial intentions. These findings are in line with Shook and Bratianu (2010).

The negative, weak impact of subjective norms suggests that attitudes towards entrepreneurship displayed by the student's family, closer friends or other societal models are unlikely to foster entrepreneurial intentions. Indeed, a more intense social pressure will lower the willingness of subjects in our sample to follow an entrepreneurial

path (although this negative impact is quite low). This result is not in line with observations that family tradition role models tend to influence entrepreneurial behavior positively (Parker, 2004). Ajzen (1987) states that subjective norms are less predictive of intentions for subjects with higher internal locus of control. This construct refers to the extent to which individuals believe that they can control events and outcomes in their own lives (Rotter, 1966). It is possible that the subjects in our sample may possess a high internal locus of control and confidence in their ability to pursue an entrepreneurial path and therefore may be less influenced by perceived social norms about entrepreneurship.

As pointed out in section 5.2 of this study, empirical studies often find the subjective norm construct to be a weak predictor of intentions. Studies have raised several problems with this construct, mainly due to measurement issues (mostly single-item measures are used) and the need for expansion of the normative component (Armitage & Conner, 2001). By using a multi-item scale the present study has tried to overcome these issues, but subjective norms continued to be a weak predictor of intentions. It is likely that additional predictors and improvements in the construct are necessary to increase its predictive value.

The percentage of variance in intentions explained by the components in the present study is very high (R^2=0.90) when compared with previous research. In their meta-analytic review, Armitage and Conner (2001) found that TPB accounted for between 27% and 39% of the variance in behavior and intentions. However, we still found studies from different fields (e.g. Doll & Ajzen, 1990) which presented a high percentage of variance explained (R^2 = 0.88). In the present study, behavior was not analyzed, what could probably explain the high variance found, as well as the low variance in the demographic characteristics of the sample (namely age, gender, and background).

As regards to the multi-group analysis, the measurement and structural models were invariant across the groups tested (gender and professional experience). In other words, the multi-group test revealed that TPB is equally applicable to predict entrepreneurial intentions in male and female students, and in students with and

without professional experience. As mentioned in section 5.2, several studies show a higher propensity of males towards entrepreneurial intentions and behaviors, as well as a positive influence of professional experience. Again, the low variance in demographic characteristics, as well as the small sample size may have prevented our analysis from discovering the same disparities between genders and experiences revealed by other studies. Probably if it was a bigger sample, the differences between genders would emerge? Or if there was the same number of males and females, the results would be different? Probably females are more entrepreneurs than males? Or females face higher barriers regarding career decisions than men? We did not find any study about Portuguese sport sciences students profile in order to address some of these questions.

5.5.2 Limitations.

Our findings need to be interpreted with some caution. While this research represents an important step in analyzing predictor variables of entrepreneurial intentions in sport sciences, additional research is required to increase confidence in the generalization of findings. This study has several limitations that arise from having cross-sectional and self-reported data, which could limit the development of causal relationships, as well as increase the bias and data subjectivity. Longitudinal studies and triangulation of data are necessary in future research. The use of a convenience sample can also be considered a limitation of the study. In this study the link between intentions and behavior has not been analyzed, which can also influence the results.

5.5.3 Implications and Guidelines.

The present study's findings lend further support for the TPB – in particular for the role of attitudes and behavioral control – and introduces novel perspectives on the antecedents of entrepreneurial intentions in sport sciences field. From a practical point of view, several guidelines are proposed to promote entrepreneurial intentions and behaviors through formal and informal curriculum development (see Table 5.2 and Table 5.3).

Table 5.2. Suggestions to improve curriculum design and teaching: to increase entrepreneurial intentions

How to increase entrepreneurial intentions through PA and PBC	
Formal curriculum	**Informal Curriculum**
- Entrepreneurial environment, mindsets and attitudes - The use of the internet/online social media - Multidisciplinary approaches and management knowledge for all (e.g. business plan courses; how to get finance; business angels; supports….) - Experiential learning, rather than the transmission of knowledge - Learner's active participation and students-approved system to enhance student motivation in the learning process - Contingency (assimilation of concepts, accommodation of divergent thinking) and constructivist approaches (creative learner that acts on the environment and create new knowledge) - Insisting in the importance of the entrepreneur to the society and highlight main issues (concept of entrepreneurship, the role of entrepreneur, development of the venture after success, how to overcome failures…) - Direct participation of experienced entrepreneurs in training programs - Internships in professional contexts with local and external mentoring - Visits to companies - Development of projects about interventions/start-ups (and students could vote for the most entrepreneurial project) - Introduce entrepreneurship skills to subjects (creativity, innovation…)/ skill-development exercises - Experience of failure, risk, responsibility and opportunity identification training in the learning process - Team work - A portfolio of techniques to practice entrepreneurship - Individual meta competences (meta-affection, meta-conation and meta-cognition) - Worksheets for problem solving - Brief reflections in classes	- Entrepreneurial environment, mindsets and attitudes - The use of the internet/online social media - Diversity of educational experiences - Insisting in the importance of the entrepreneur to the society and highlight main issues (concept of entrepreneurship, the role of entrepreneur, development of the venture after success, how to overcome failures…) - Development of projects about interventions/start-ups - Visits to companies - Entrepreneurship workshops/seminars and competitions - Entrepreneurship awards for former students (where they can share experiences with students) - R&D centers in entrepreneurial studies

According to Kelly (2009), the formal curriculum is related with formal activities organized by school during teaching periods. Informal curriculum activities are related with the organizational culture inside the academic institution and happen voluntarily and after school hours. In line with the results of our study, we provide guidelines regarding the promotion of entrepreneurial intentions through increasing perceived

attitudes towards entrepreneurship and perceived behavioral control, and do not address subjective norms.

Table 5.3. Suggestions to improve curriculum design and teaching: to increase entrepreneurial behaviors

How to reduce the gap between entrepreneurial intentions and behaviors through formal or informal curriculum
Implementation intentions* - Example: *Material*: paper and pencil exercise; *You are more likely to achieve your goal of being an entrepreneur if you decide in advance when, where and how this is to be achieved and then stick to your plan. Please fill the spaces below:* *WHEN are you going to create your own business? Which year, month, day?* *WHERE are you going to develop your own business?* *HOW will you do it? What kind of organization it will be? How many partners? How much money you need to spend? Have you already developed your business plan? If not, do it as soon as possible!*
Commitment - Example: *Material*: paper and pencil exercise (commitment form); *The commitment form can be applied after the exercise of implementation intention or just by itself.* *I hereby make a commitment to carry out intentions I have made to develop my own business, in the year, month and day previously mentioned, creating a business plan…*
Combination of motivational techniques + volitional techniques* - Example: *Motivational techniques:* to promote awareness seminars and entrepreneurship workshops; to invite recognized entrepreneurs to share their experience; *Volitional techniques:* implementation intention (see 1st exercise).

5.6 Concluding remarks

The present study makes three main contributions:

1. It finds partial support for the theory of planned behavior in explaining entrepreneurial intentions of a hitherto unaddressed group: sport sciences students;
2. It further questions the role of subjective norms in explaining intentions under specific settings;
3. It offers several suggestions to improve curriculum design in order to promote entrepreneurial intentions.

This study finds that the theory of planned behavior does contribute to explain entrepreneurial intentions of sport sciences students, extending its reach to a new group and stressing the importance of analyzing entrepreneurial attitudes and perceived behavior control of sport sciences students to develop a more entrepreneurial

curriculum. In addressing the research questions originally set out, it appears that the impact of attitudes and behavioral control on intentions is not significantly different for different genders, or for students with and without professional experience. It is possible, however, that data restrictions may have made it impossible to detect such differences.

The guidelines proposed based on the results are important to the practice of entrepreneurship education. The enhancement of entrepreneurial intentions and behaviors of non-business students requires fostering their attitudes toward an entrepreneurial path and increasing their perceived behavior control. This is in line with the suggestions of Ajzen (1991) related with the use of the theory of planned behavior to implement interventions to change behaviors based on different predictors.

The main conclusion and key theoretical message that emerge from this study relate to a better understanding of the variables that most influence entrepreneurial intentions of sport sciences students. The concepts of perceived attitude and perceived behavioral control should be implemented and promoted through curriculum.

Future research could address some of the limitations of the present study. Following Liñán (2008), the questionnaire may be revised so reverse items are eliminated and different variables are introduced to differentiate elements of the sample. In the future this direction of research should be pursued in order to understand why these variables do not influence this specific sample.

5.7 Acknowledgements

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Empirical Study 2

Influencing factors in the entrepreneurial life course of former students: a multicase study

Abstract

The aim of this study was to examine the role that undergraduate training in sport sciences played in the promotion of entrepreneurial/intrapreneurial practices. Several questions are addressed: Where did entrepreneurs/intrapreneurs innovate? Which factors most influenced entrepreneurs/intrapreneurs paths (in academic, personal, professional and social domains)? Which factors of undergraduate training were important to their entrepreneurial/intrapreneurial paths?

We conducted a multiple case study based on interpretive and comparative research which follows a qualitative approach, using semi-structured interviews and content analysis as core research techniques. The sample consisted of eight entrepreneurs/intrapreneurs, who were former students of different undergraduate courses of the Faculty of Human Kinetics, aged between 35 and 54 years. Different strategies were followed to increase validity and reliability issues (e.g. literal and theoretical replication, triangulation between data sources).

Most participants' valued the undergraduate training during their paths and three distinct patterns emerged: i) prevalence of undergraduate training, ii) prevalence of continuing training and, iii) prevalence of family and contact with the professional context. These findings can open new perspectives for researchers and practitioners such as policy makers, entrepreneurship educators and educational leaders.

Keywords:

Entrepreneurs, intrapreneurs, innovations, entrepreneurial profiles, multiple case, undergraduate training, continuing training, entrepreneurial attributes, formal curriculum, informal curriculum.

6.1 Introduction

Encouraging entrepreneurship is crucial to create jobs and improve competitiveness and economic growth in Europe and it should be a major skill to be promoted through lifelong learning. Entrepreneurship education is a complex process and more and more people advocate the idea that education systems can help promote entrepreneurship from basic education to university, in all areas (Hynes, 1996).

On the issue of higher education in Portugal, the first institution to offer entrepreneurship education was the Catholic University in 1992 and Redford and Trigo (2007) sums up entrepreneurship education, mentioning two different trends: the teaching of entrepreneurship subjects at different institutions and the development of entrepreneurship centers. Most of the lecturers surveyed in their study said that their university planned to set up an entrepreneurship/innovation center (Redford & Trigo, 2007).

Undergraduate curriculum refers to the knowledge, principles, values and skills that students must achieve in the end of undergraduate education, constituting itself as a body of courses (García & Ratcliff, 1997). It is important to remember that a curriculum is not helpful unless it meets the needs of the society. It becomes essential to have an updated curriculum that reflects the changes and the current paradigms (Patesan & Bumbuc, 2010) and universities have a responsibility to adjust their educational offer to the world's challenges. This change can be addressed through entrepreneurship education and the promotion of entrepreneurial competences in the curricula.

Entrepreneurship is an integral part of any professional industry (Ratten, 2011) and, as a complex social phenomenon, is studied from different perspectives (Gartner, Bird & Starr, 1992). Although there is a growing trend to include other areas, most studies still focus in economics/business and engineering. Entrepreneurship has been studied from a variety of disciplines and Sport Sciences is no exception. Recently, scholars appeal for the integration of entrepreneurship and sports' management disciplines (Ratten, 2011), because sports' entrepreneurs are increasing and start recognizing that they need to be more strategic and innovative in their actions in order to capitalize on opportunities that exist in challenging economic conditions. As Ratten

(2012) mentions, sports' entrepreneurs identify opportunities based on their background and experience and sometimes the amount and type of information a sports' entrepreneur possesses will enable him to make a decision about an opportunity.

There is a dearth of research examining sport sciences and entrepreneurship. According to Ratten (2012) few studies have empirically developed and tested a sport entrepreneurship construct, and little conceptual or empirical research has been devoted to understanding the conditions that produce sports' entrepreneurship. Ratten (2011) has studied the relation between Sport Management (SM) and entrepreneurship and argues that SM can be considered an entrepreneurial process because of the characteristics they have in common. This author also proposes sport-based entrepreneurship as a category of entrepreneurship that fosters economic development in the SM field. Beyond a study conducted by Naia (2009), no other studies about the impact of undergraduate training on the development of entrepreneurship in sport sciences were found.

Through sport many new ideas can arise and allow entrepreneurship to take place (Ratten, 2011). Besides SM, we can include in the sport sciences field, Sport Coaching, Exercise and Health, and Physical Education. In each one of these, entrepreneurial competences can emerge and sport sciences students can benefit of this interaction, becoming better professionals and more aware of their opportunities at a time when employability is increasingly difficult.

The problem that stimulated this research was the absence of specific curriculum that promotes entrepreneurship education among undergraduate students in sport sciences. Following previous appeals and trying to address some preoccupations and gaps found, we develop this study with the main purpose to examine the role that undergraduate training in sport sciences played in the promotion of entrepreneurial/intrapreneurial practices. Several questions are addressed: Where did entrepreneurs/intrapreneurs innovate? Which factors most influenced entrepreneurs/intrapreneurs paths (in academic, personal, professional and social domains)? Which factors of undergraduate training were important to their entrepreneurial/intrapreneurial paths? This analysis is of interest not only to

researchers, but also to practitioners (e.g. policy makers, entrepreneurship educators, educational leaders).

The study is organized as follows. After this introduction, Section 2 presents the theoretical and conceptual framework of analysis. Section 3 presents the method used. Section 4 presents and discusses the results, divided in two parts: within-case analysis and cross-case pattern search. It also reflects on the value and limitations of the analysis while providing suggestions for future research. Section 6 concludes, emphasizing main findings.

6.2 Theoretical and conceptual framework

6.2.1 Entrepreneurship and intrapreneurship.

Entrepreneurship is a crucial characteristic in today's society, extremely relevant to the worldwide economy and to global development, being associated with a capacity for innovation, initiative (Drucker, 2006), and creativity (Shane, Locke & Collins, 2003). In the present study and in line with Krueger (1993), Drucker (2006), and others, we take a narrower definition of entrepreneurship and take it as the creation and development of a new venture, with new products/processes. In addition to entrepreneurship strictly related to the creation of companies, we also mention other forms not limited to this facet, such as intrapreneurship, which is related with the development of something innovative inside of an organization, contributing to its development and improvement (e.g. Kuratko & Montagno, 1989; Cunningham & Lischeron, 1991; Baron & Shane, 2008).

6.2.1.1 Factors that influence entrepreneurship: empirical evidence.

Several empirical studies have been conducted to analyze which factors influence entrepreneurship, related with entrepreneurial attributes, or with the influence of different factors (e.g. family, contextual and social factors, professional experience and education).

Table 6.1 presents a summary of some of those studies.

Table 6.1. Factors that influence entrepreneurship: empirical evidence

Factors	Publications
Entrepreneurial attributes	
Determination	Lee-Gosselin & Grisé (1990); Timmons & Spinelli (2007)
Tolerance for ambiguity	Sexton & Bowman (1985)
Need for autonomy	Sexton & Bowman (1985)
Humility and enthusiasm	Toftoy & Jabbour (2007)
Failure	Learn with failure: Minniti & Bygrave (2001) Role of emotions in learning from failure: Shepherd (2004)
Self-confidence	Heinonen, Poikkijoki & Vento-Vierikko (2007); Soetanto, Pribadi & Widyadana (2010)
Persistence	Timmons & Spinelli (2007); Gompers, Kovner, Lerner & Scharfstein (2010)
Self-efficacy	Krueger & Brazeal (1994); Chen, Crick & Greene (1998)
Motivation	Shane, Locke &Collins (2003); Ferreira, Raposo & Rodrigues (2007)
Opportunities identification	Ray (1993); Venkataraman (1997); Shane & Venkataraman (2000); DeTienne & Chandler (2004); Kuratko (2005)
Risk-taking propensity	Franke & Luthje (2003); Kuratko (2005) May not be a characteristic that distinguish entrepreneurs: Brockhaus (1980)
Locus of control	Brockhaus & Horwitz (1986); Shane, Locke & Collins (2003); Franke & Luthje (2003)
Need for achievement	McClelland (1961); Shane, Locke & Collins (2003); Franke & Luthje (2003)
Proactivity	Ratten (2012)
Innovation	Drucker (2006); Ferreira, Figueiredo & Pereira (2007); Schumpeter (2007)
Creativity	Ronstad (1985); Ray (1993); Baron & Shane (2007)
Leadership	Ray (1993); Baron & Shane, 2007; Timmons & Spinelli (2007)
Initiative	Ferreira, Figueiredo & Pereira (2007)
Problem solving skills	Spencer (1986); Ray (1993)
Planning skills	Spencer, 1986; Ray (1993)
Negotiation skills	Ray (1993)
Oral and written communication	Ray (1993)
Listening skills	Ray (1993)
Social competences	Social perception (perceiving others) Baron & Markman (2003), Ray (1993) Social adaptability, expressiveness Baron & Markman (2003)
Diversified and updated knowledge	Tavares (2003)
Family	
Exposure to family business/entrepreneurs in the family	Erkkila (2000); Ferreira, Raposo & Rodrigues (2007) Self-employed husband: Bruce (1999) Self-employed parents: Delmar & Davidsson (2000)
Genetic factors	Nicolaou & Shane (2009)
Contact with professional context	
Competition sports	Krueger & Neergaard (2012)
Projects organization and development	Ferreira, Figueiredo & Pereira (2007)
Business experience	Jo & Lee (1996); Davidsson, Lindmark & Olofsson (1994)

Factors	Publications
Social and contextual factors	
Job dissatisfaction	Brockhaus & Horwitz (2002)
Employment status	Delmar & Davidsson (2000)
Networks	Ronstad (1985); Ray (1993); Greve (1995)
Role models	Aldrich, Renzulli & Laughton (1997); Delmar & Davidsson (2000); Fry, Stephens & Van Auken (2006); Soetanto, Pribadi & Widyadana (2010)
Institutional environment/environmental conditions	Shane, Locke & Collins (2003); Lu & Tao (2010)
Political and economic uncertainties	Soetanto, Pribadi & Widyadana (2010)
Lack of initial investment	Soetanto, Pribadi & Widyadana (2010)
Education	
Delmar & Davidsson (2000); Ferreira, Raposo & Rodrigues (2007) Business education: Jo & Lee (1996)	

6.2.1.2 Innovation: entrepreneur's main tool.

Innovation refers to an idea, practice or object that is perceived as new by an individual or by a unit of adoption. The novelty of an innovation can be expressed in terms of knowledge, persuasion, or a decision to adopt (Rogers, 2003). According to Swann (2009), Rogers (2003) and Drucker (2006), there are several key aspects in the innovation definition, such as: looking for change, opportunities analysis and anticipation, it depends of the market acceptance, it has effects on the society and in economic field, ideas exploitation and commercial and wealth creation.

Although there are several types of innovation we are going to focus on those which are more frequently mentioned in the literature, namely: product, process, organizational and marketing. According to Swann (2009), product innovation refers to the introduction of new goods or services, or improvement of the existing ones; and, process innovation refers to the implementation of a new or improved method/process to produce or to distribute the product (changes in techniques, equipment or software). As regards to the organizational innovation it refers to the implementation of a new way to organize the business practices of the company, the workplace or the external relations; and, marketing innovation refers to the introduction of a new concept or marketing strategy in the design/packaging, distribution, pricing or promotion of products (Ministério da Ciência, Tecnologia e Ensino Superior, 2008).

6.2.2 Entrepreneurial activity and entrepreneurship education in Portugal.

According to the Global Entrepreneurship Monitor (GEM) Portugal 2010 (SPI Ventures, IAPMEI, & Fundação Luso-americana, 2010), Portugal has been heavily affected by the international financial and economic crisis, with particular impact on the unemployment rate. As regards the characteristics of the entrepreneurial activity in Portugal, this study indicates that the number of female entrepreneurs equals about half of the number of male entrepreneurs who also exhibit a higher level of skills or knowledge to create a business. The study shows that the majority of entrepreneurs are aged between 25 and 34 years old (vs 2007, when it was between 35 and 44 years old). As to the motivations to start a business, most entrepreneurs are motivated by opportunity, although the percentage of entrepreneurs motivated by necessity increased when compared to 2007 (31.1% in 2010 *vs*. 22.7% in 2007).

In what concerns the promotion of entrepreneurship education and training in higher education institutions, it was considered one of the most positive aspects by the national experts (and higher than in 2007). However, the reduced attention given to entrepreneurship in primary and secondary education was identified as one of the less favorable aspects within this structural condition (and lower than in 2007).

On the issue of higher education in Portugal and as regards to the Technical University of Lisbon (TUL), having seven schools, one of which is the Faculty of Human Kinetics (FHK), the context of our study, it is important to describe the initiatives undertaken to foster entrepreneurship, focusing on two main aspects: entrepreneurship training (56 curricular units on entrepreneurship and innovation) and university and school support structures such as workshops to transfer knowledge and technology, support centers, science and technology parks (Gonçalves, 2010). This author says that around 30% of technology-based companies with connections to universities came from TUL schools, which shows its importance in fostering these initiatives.

6.2.3 Curriculum and the promotion of entrepreneurial competences.

Undergraduate curriculum refers to the knowledge, principles, values and skills that students must achieve in the end of undergraduate education, constituting itself as a body of courses (García & Ratcliff, 1997). It is important to develop undergraduate curriculum of higher education in terms of transition between school and society. Part-time work during classes attenuates the boundaries between these two contexts, allowing the student to engage with society. These programs should be frequently revised because the curriculum is constantly changing in response to the external factors, forces and trends that shape it and give it life and meaning (García & Ratcliff, 1997).

According to Kelly (2009) the formal curriculum is related with formal activities organized by schools in specific periods of teaching time, approved by state or local boards (e.g. subject matters, learning experiences, objectives, rules and regulations of an institution). Informal activities related with the organizational culture inside academic institutions and that happen in a voluntary basis, at lunch-times, after school hours, belong to informal curriculum. Schultz (2010) defines this curriculum as the one learned in schools that does not occur through explicit instruction (e.g. study visits), related with school culture and expectations of all stakeholders that are part of the educational process. On the other hand, Goodlad (1984) proposed five different ideas of curricula: the ideal curriculum (ideals of curriculum claimed by governments, special groups of interest and teachers' professional organizations), the formal curriculum (the aforementioned definition), the perceived curriculum (teacher's interpretation of formal curriculum), the operational curriculum (what actually takes place in the classroom), and the experiential curriculum (what students do, think and derive from the operational curriculum).

Higher education is at the pinnacle of education and largely determines its quality. Any changes in society tend to be reflected in the curricula of higher education institutions, probably because they correspond to the end of formal education and the last opportunity to entry into the world of work. It cannot isolate from the problems and

needs of society and therefore must strive to prepare specialists who will be responsible for the future (Patesan & Bumbuc, 2010).

Actually and in order to meet social demands, the curriculum should incorporate entrepreneurship education through the introduction of entrepreneurial competences. In this work the concept of entrepreneurial competences is in line with the definitions presented by Man, Lau and Chan (2002) and Lans, Biemans, Mulder and Verstegen (2010), encompassing personality traits, skills and knowledge that allow an entrepreneur to perform a task successfully.

6.2.4 Sport Sciences curriculum and entrepreneurship.

The growth and diversity of the hospitality, leisure, tourism and sports industries along with increases in consumer expectations of their leisure time and experiences have placed greater demands on providers. Graduates with entrepreneurial abilities, good technical, business and interpersonal skills are increasingly being sought by employers (Ball, 2001). Although entrepreneurship has little recognition in the sports context, namely in the sports management literature (Ratten, 2012), Hardy (1997) highlights the importance of analyzing sports from an entrepreneurial perspective and contends that research should follow this tendency. In the same line, Ratten (2012) refers that an entrepreneurial culture is important in the support and fostering of entrepreneurial sport opportunities. Both entrepreneurship and sports aspire to boost economic and regional development and share several characteristics, such as innovation, pro-activeness, risk taking, initiative and opportunity seeking.

Sports' entrepreneurs are often involved in social and community activities that create social value rather than just personal wealth (Ratten, 2012). Sports' entrepreneurship is a multifaceted issue that requires a multidisciplinary approach and focus in sports-related exploration, sport venture creation and sports orientated (Ratten, 2012). It refers to innovative activities within the context of sports enhanced with a proactive and risk taking quality (Ratten, 2011). It is valuable for both established and new organizations, helping to position them better in the market and to sustain a competitive advantage, offering innovative ways to help resolve social and economic

problems (Ratten, 2012). Ratten (2011) refer that sports' entrepreneurship concern people or organizations related with sport that innovate in business procedures, creating something different from what has been done before. This definition is based on an interdisciplinary perspective that highlights how sport management often encompasses areas of entrepreneurial studies and vice versa.

As sports entrepreneurship is a newly emerging field, an important issue is its definition, where innovation is the focus of this process. Sports' entrepreneurship in this work is conceptualized as innovative activities in the sports context developed by people or organizations.

According to Ratten (2012) few studies have empirically developed and tested a sport entrepreneurship construct and little conceptual or empirical research has been devoted to understanding the conditions that produce sports' entrepreneurship. However some studies about this complementarity have been discussed in previous research, focusing on different issues: development of human capital and competitive sports (Krueger & Neergaard, 2012); entrepreneurial attitudes and sport franchise (increase net income) (Legg & Gough, 2012); entrepreneurial strategies and brand management theories (Miloch, Lee, Kraft & Ratten, 2012); relationship between exercise and the attainment of personal and professional goals for entrepreneurs (Goldsby, Kuratko & Bishop, 2005); entrepreneurial systems (Spilling, 1996); and, "sport entrepreneurship" field and suggestions for further research (Ratten, 2012).

Ratten (2012) highlights the importance of this concept to the development of new sport ventures arguing that the ability of a sport entrepreneur to perform a task successfully is an important aspect of entrepreneurial competence. Entrepreneurial competences are required to help a sport entrepreneur during the sequential stages of his/her entrepreneurial life. A major driver for understanding entrepreneurial competences is their relevance to business performance and economic growth with the sport sector.

6.3 Method

In the last decades, qualitative research methods have gained acceptance in academic research and have been increasingly used and the use of case studies reflects this trend (e.g. Kisfalvi, 2002; Coviello & Jones, 2004). According to Yin (2003) and Eisenheardt (1989), case studies are especially suited to explore current and real-time phenomena in depth, contributing to the knowledge of individual, group, organizational, social and political phenomena. On the other hand, Yin (2003) still mentions that case studies can involve quantitative or qualitative data only, or both, and when the same study includes the analysis of more than one case, we are in the presence of a multiple case study, increasing the robustness and sustainability of the research. In the same line, Miles and Huberman (1994) refer that multiple case studies adds confidence and stability to the findings. The importance of replication is also emphasized by Yin (2003), differentiating two types: literal replication (obtaining similar results) and theoretical replication (obtaining contrasting results but for predictable reasons).

This is a multiple case study, based on interpretive and comparative research which follows a qualitative approach, such as Sutton and Callahan (1987) that rely exclusively on qualitative data in their study of bankruptcy in Silicon Valley. It followed Kanter's (1977) suggestion that different sources of data can be used to validate one another (interviews to the expert's, entrepreneurs/intrapreneurs *curriculum vitae*, interviews to the entrepreneurs/intrapreneurs, their classmates and their lecturers), thereby providing further opportunity for triangulation. The use of triangulation in qualitative research constitutes one way to increase both reliability and validity (e.g. Willig, 2001; Yin, 2003).

In what concerns the definition of the case in the present study, it corresponds to our unit of analysis: entrepreneurs and intrapreneurs paths and their perceptions about those paths. According to Miles and Huberman (1994), the definition of the case is an important issue, and sometimes the case can correspond to individuals, roles, organizations, small groups, communities and nations. The main purpose was to valorize entrepreneurs/intrapreneurs perception about their paths, and all the research is contextualized according to the uniqueness of each path and to the existence of

different experiences in their lives. As regards the generalization of the study findings it is important to clarify the scope and the boundaries of this study, which focuses in sport sciences setting, within Portuguese culture, in the eighties and nineties.

6.3.1 Context of study: Faculty of Human Kinetics.

The Faculty of Human Kinetics (FHK) is the oldest sports and physical education faculty in Portugal. It became part of the TUL in 1975. It is the fruit of its long history, marked by successive reformulations of its objectives and by its adaptation to society's needs, as these were interpreted by the institutions that preceded it – the National Institute of Physical Education from 1940 to 1975 and the Higher Institute of Physical Education up to 1989. The main goal of FHK is human development through movement, by means of the study of the body and its manifestations in the interaction between biological processes and sociocultural values (Technical University of Lisbon, s/d; Faculty of Human Kinetics, s/d). In the epistemological framework of sport sciences, the FHK offers several degrees, although we are going to analyze the following: Sports Management, Exercise and Health, and Sports Coaching (1st cycle/undergraduate, 3 years); and Physical Education (1^{st} + 2^{nd} cycle/master, 5 years).

The main reason for choosing the FHK was because it offers courses in areas in which entrepreneurship is not actively promoted and also because it is one of the schools at TUL where there are few initiatives promoting entrepreneurship and only in the 2^{nd} cycle: entrepreneurship in the Sport Management course and an entrepreneurship education module in the Psychomotor Rehabilitation Master and yet many entrepreneurs/intrapreneurs emerge.

6.3.2 Sample selection.

This study was organized in two different phases: extensive and intensive, as shown in Table 6.2. The extensive phase has the purpose of selecting the main sample (entrepreneurs/intrapreneurs). The intensive phase consisted in the multiple case study, where participants were interviewed and analysis were conducted.

Table 6.2. Phases of the multicase study

I | Extensive Phase |Case selection and contacts
Interviews to the experts of sport sciences September – December 2009; FHK; lasted approximately 30’
II | Intensive Phase |Multiple case study
Interviews to entrepreneurs/intrapreneurs January – March 2010; several places and countries; 1h30 – 7h00
Interviews to entrepreneurs/intrapreneurs classmates March - April 2010; several places; 45’- 2h00
Interviews to entrepreneurs/intrapreneurs lecturers April - May 2010; FHK; 45’-1h30

6.3.2.1 Extensive phase: case selection and contacts.

According to the literature we selected the characteristics of entrepreneurs/ intrapreneurs profile, which constitute the main criteria to select study participants. Afterwards, a detailed conceptual framework of entrepreneurship and innovation was developed and several sources (e.g. professional associations, scientific associations, peers) were consulted in order to form the expert’s in sport sciences. Most of the experts were lecturers in FHK with 25 years of experience in the field (not only in teaching, but some of them, in sports practice or coaching, belonging to different professional and scientific associations). After experts analyzed the conceptual frameworks and selection criteria, it was asked to mention representative entrepreneurs/intrapreneurs, specifying and justifying their innovations (process, product, organizational and marketing). Those who were referred for a greater number of experts were selected to participate in the study and were contacted.

First, the participants were contacted by telephone to communicate the research intention/approach, to schedule a day for the interview and to ask for their *curriculum vitae*. All participants were willing to participate in the research thus achieving the optimal number of cases between four and ten (Eisenhardt, 1989). As this author mention, random selection is not necessary. Second, after the *curriculum vitae* analysis, the interviews were conducted. It was asked to the entrepreneurs/intrapreneurs (some of them international references in the sports field) not to remain anonymous, but to keep confidentiality restrictions, because as Yow (1994) mentions, this would be a way to perpetuate their works, allowing that their testimonies prevails. All of them accepted.

Entrepreneurs/intrapreneurs selection criteria

In this study, and as in most qualitative samples, it was used a *purposive* criteria (Kuzel, 1982; Morse, 1989), instead of a random or representative one (Eisenhardt, 1989), to select participants (entrepreneurship/intrapreneurship), among other criteria:

- Former FHK student;
- Degree completed at least three years ago;
- Characteristics of entrepreneur/intrapreneur in the area of degree;
- Social impact within the company/organization must and be recognized as a reference in the field.

6.3.2.2 Intensive phase: multiple case study.

Entrepreneurs/entrepreneurs' characterization.

The sample consisted of eight entrepreneurs/intrapreneurs, who were former students of FHK undergraduate courses (Sport Coaching, Physical Education, Exercise and Health and Sport Management) aged between 35 and 54, as shown in Table 6.3.

Table 6.3. Entrepreneurs/entrepreneurs' characterization

Participant	Specialization	Characteristics	Age	Gender	Qualifications
Luís Bom	Physical Education	Intrapreneur	54	M	Degree in Physical Education (1980)
Jorge Mira	Physical Education	Intrapreneur	54	M	Degree in Physical Education (1984)
Teresa Branco	Exercise and Health	Entrepreneur	40	F	Degree in Physical Education and Sport (1993)
Joana Froes	Exercise and Health	Entrepreneur	43	F	Degree in Physical Education (1992)
Fernando Marques	Sport Coaching	Entrepreneur	51	M	Degree in Physical Education (1982)
José Mourinho	Sport Coaching	Intrapreneur	47	M	Degree in Physical Education (1987)
José Beirão	Sport Management	Entrepreneur	42	M	Degree in Physical Education and Sport, Internship in Sports Management (1995)
António Sacavém	Sport Management	Intrapreneur	35	M	Degree in Sport Sciences, major in Sports Management (1996)

This sample gathers cases from different chronological periods, offering a big diversity in what concerns the academic curricula, reflecting thereby the curricular and ideological development and evolution of the institution.

Entrepreneurs/intrapreneurs classmates' characterization.

For comparison and theoretical replication effects, after the entrepreneurs/ intrapreneurs were interviewed, they were asked to give contact information for a classmate with no record of entrepreneurial activity, which was confirmed by an analysis of their *curriculum vitae*. The classmates were interviewed about the impact of undergraduate training on their professional lives so that we could compare then with the entrepreneurs/intrapreneurs and try to understand why certain factors instilled an entrepreneurial mindset in some and not in others or even to discover any additional important elements that may have been missed.

The sample consisted of eight entrepreneurs/intrapreneurs classmates, who were former students of FHK undergraduate courses (Sport Coaching, Physical Education, Exercise and Health and Sport Management) aged between 36 and 53, as shown in Table 6.4.

Table 6.4. Entrepreneurs/intrapreneurs classmates' characterization

Participant	Specialization	Age	Gender	Qualifications
Luís Bom classmate	Physical Education	53	M	Degree in Physical Education (1980)
Jorge Mira classmate	Physical Education	50	M	Degree in Physical Education (1985)
Teresa Branco classmate	Exercise and Health	41	F	Degree in Physical Education and Sport (1993)
Joana Froes classmate	Exercise and Health	41	F	Degree in Physical Education (1992)
Fernando Marques classmate	Sport Coaching	59	M	Degree in Physical Education (1981)
José Mourinho classmate	Sport Coaching	48	M	Degree in Physical Education (1987)
José Beirão classmate	Sport Management	42	M	Degree in Physical Education and Sport, Internship in Sports Management (1995)
António Sacavém classmate	Sport Management	36	M	Degree in Sport Sciences, major in Sports Management (1997)

Lecturers' characterization.

Later, based on a detailed analysis of the interviews and the testimony of the participants and their classmates, we interviewed lecturers who the

entrepreneurs/intrapreneurs said had been important to them, in order to ascertain their characteristics and how they influenced former students' business careers through subject matter or attitudes that induced change and opened horizons. Apart from this, we followed other criteria to select the lecturers with the main purpose of reduce the initial number:

- Number of times mentioned by the entrepreneurs/intrapreneurs, though it could be mentioned only for one participant, if it was one of the most important factors in their paths;
- Cases that already belonged to other samples were excluded. One of the referred lecturers has passed away.

It is important to mention that lecturers were referred by two main issues: theoretical/conceptual contribution to the entrepreneurial path or as promoter of an entrepreneurial attitude/mindset. The sample consisted of nine lecturers, aged between 46 and 77, as shown in Table 6.5.

Table 6.5. Lecturers' characterization

Lecturers	Subjects	Age	Gender	Qualifications
1	Basketball (mentioned by PE participants)	74	M	PhD in Sport Sciences (1995)
2	Philosophy (mentioned by SC participant)	77	M	PhD in Human Kinetics (1986)
3	Sports Marketing (mentioned by SM participants)	46	M	PhD in Sport Sciences (2000)
4	Management of Sport Organizations (mentioned by SM participants)	65	M	PhD in Human Kinetics (1989)
5	Teaching Techniques, Physical Education for Schools(mentioned by PE participants and by one participant of SC)	62	M	PhD in Human Kinetics (1988)
6	Gymnastics (mentioned by EH participant)	55	M	PhD in Sport Sciences (1991)
7	Motor Development, Child Kinetics (mentioned by PE participants)	59	M	PhD in Human Kinetics (1987)
8	Systematics of Sports Activities (mentioned by SM participant)	63	M	PhD in Sport Sciences (1987)
9	Judo (mentioned by PE participants)	61	M	Undergraduate in Physical Education (1971)

6.3.3 Data collection instruments.

We collected data using semi-structured interviews with all the participants': entrepreneurs/intrapreneurs, classmates and lecturers (Appendix 1). All interviews were recorded and then transcribed for coding. Additionally, all participants were re-contacted, and transcriptions were sent to them for communicative validation or falsification and additional information (Flick, 2008). According to Yin (2003), the interview is one of the most important instruments in case study, especially semi-structured interviews. A multiple case study conducted by Naia (2009) it was useful for two main reasons: 1) to validate the interview; 2) to select the scientific field to analyze in depth, Sport Sciences. Table 6.6 specifies the different levels of analysis applied to the fully transcribed interviews.

Table 6.6. Process of building theory from case study research (adapted from Eisenheardt, 1989)

Chapter	Step	Activity
Introduction	Getting started	Definition of research question
Research methodology	Selecting cases	Specified population; theoretical, not random, sampling (cases selection representativeness cases of a given characteristic)
	Crafting instruments and protocols	Triangulation of methods and data
	Entering the field	Flexible data collection methods
Findings	Analyzing data	Within case analysis; cross case pattern search using divergent techniques
	Shaping hypothesis	Iterative tabulation of evidence for each construct; replication, not sampling, logic across cases (confirms, extends and sharpens theory); search evidence for "why" behind relationships
Discussion	Enfolding literature	Comparison with conflicting literature (builds internal validity, raises theoretical level, and sharpens construct definitions); comparison with similar literature (sharpens generalizability, improves construct definition, and raises theoretical level)
	Reaching closure	Theoretical saturation when possible (when marginal improvement becomes small)

6.3.4 Data coding and analysis.

In order to carry out the data coding and analysis, as rigorously as possible, and to preserve the study's primarily inductive nature, we followed the guidelines suggested by Strauss and Corbin (1998) and by Miles and Huberman (1994) about coding and interpretation from the ground up. We developed a coding scheme for the purpose of

conducting content analysis of the interviews, which was further presented and discussed with researchers/peers. According to Strauss and Corbin (1998) categories refer to concepts that stand for phenomena; subcategories refer to concepts that pertain to a category clarifying and specifying it; and, dimensions represent the range which general properties of a category vary giving specification to a category and variation to the theory.

In what concerns the type of categorization, it is possible to differentiate two types: organized before or after data analysis (Poirier, Clapier-Valladon & Raybaut, 1983). In this study, most of it was organized before, although some emerged after the analysis. According to Bardin (1977) we choose categorical and thematic analysis and our coding scheme is organized in one dimension (factors which influence entrepreneurial/intrapreneurial paths), with categories and subcategories, related with main research questions/goals, analyzing the presence or absence of it, based upon participants perception. In what concerns the categories organization, and based in the literature we have the following: entrepreneurial attributes, family, contact with professional context, social and contextual factors, undergraduate training and continuing training. The thematic analysis was conducted twice for two different researchers which coded the same text of the same way.

6.3.5 Validity and reliability issues.

According to Riege (2003), despite the advantages of the case study method, its reliability and validity remains in doubt and we tried to overcome some limitations following the recommendations of this author and others that mention how the four design tests of construct validity (confirmability), internal validity (credibility), external validity (transferability), and reliability (dependability) can improve the quality of case study design. These tests are commonly applied to the theoretical paradigm of positivism and they can also be used for the realism paradigm, which includes case study research.

To ensure construct validity we described and justified in detail the methods and procedures; the data is retained and available for reanalysis (Miles & Huberman, 1994);

multiple sources of evidence were used (Flick, 2008); transcripts, findings and interpretations were sent to participants that changed unclear aspects (Yin, 2003). The internal validity was ensured by the approval of research findings by interviewees and peers; and using within-case and cross-case analysis, as well as illustrations and diagrams (Miles & Huberman, 1994). We ensured external validity through a replication logic - literal and theoretical replication - (Eisenhardt, 1989); and comparing the findings with the literature highlighting main contributions and generalizing those within the scope and boundaries of the research (Yin, 2003). Reliability, was ensured increasing the congruence between the research issues and features of the study design (Yin, 2003); recording all the interviews (Riege, 2003); conducting a pilot study (Naia, 2009) testing the interview protocol (Eisenhardt, 1989; Yin, 2003); discussing and analyzing with multiple researchers/peers methodological decisions and codification issues (Le Compte & Goetz, 1982).

6.3.6 Methodological limitations.

As with any study, this research exhibits limitations worth considering, namely: (a) the fact that some of the questions refer to things that happened a long time ago, which can reduce the testimony reports, although triangulation of sources, in our opinion, helps to overcome this limitation; (b) the scope and the boundaries of this study can (and will) reduce the generalizability of findings; (c) the absence of a quantitative analysis (frequencies count); the absence of triangulation of instruments and methods (we just triangulate data sources); (d) the cases and data collected are not comparative in terms of countries or regional locations. Some of the methodological limitations aforementioned require comment. First, for some of the participants their entrepreneurial/intrapreneurial activities happened a few years ago, whilst for others it was many years ago. Podsakoff and Organ (1986) mention some problems with self-report research relating with recall bias and distortion. This is an expected constraint inherent in any retrospective research and one not easy to solve. However, Berney and Blane (1997) showed that information recalled after long periods (up to fifty years) retains a high degree of accuracy and can remain useful. There is a criticism in

interpretative phenomenological research, which is also applied to this study, about the methodological emphasis on the individual (Berglund, 2007). Although, this research was interested in entrepreneurs/intrapreneurs perception about their paths, and so this individual focus appears appropriate.

In what concerns the findings generalization, this study focuses in sport sciences setting, within Portuguese culture, in the eighties and nineties and it remains to be seen, through further research, whether its findings can be replicated in other samples and settings. Although the findings of this study should be treated with caution, they are nonetheless suggestive.

6.4 Findings and discussion

This section will be organized by two different, but complementary parts: within-case analysis and cross-case pattern search. In the within-case analysis, case studies are presented on the basis of the areas of specialization (Physical Education, Exercise and Health, Sport Coaching and Sport Management). In each area, we present two cases: their innovations (mentioned by themselves and confronted with expert's opinion), the aspects that most influenced their careers and the importance of undergraduate training to the participants and compare them with their classmates'. In the end, we analyze and compare lecturers' views with entrepreneurs/intrapreneurs testimony, in order to ascertain similarities and differences.

As regards cross-case pattern search, we developed a table with categories emphasized by participants as being relevant to their paths and try to look for patterns across cases. Discussion is made through this section along with findings presentation, confronting with the literature and highlighting main contributions. The discussion also focuses on wider theoretical implications, policy and support implications and areas for further research.

All entrepreneurs of this study were motivated by opportunity and not by necessity (all of them had jobs but did not felt realized), what is in line with GEM Portugal

2010 (SPI Ventures et al., 2010). This trend will probably change due to the international financial and economic crisis, which has affected employment rate in the country.

6.4.1 Within-case analysis.

> Within-case analysis typically involves detailed case study write-ups for each site (….) the overall idea is to become intimately familiar with each case as a stand-alone entity. This process allows that unique patterns of each case to emerge before investigators push to generalize patterns across cases (Eisenhardt, 1989, p. 540).

6.4.1.1 Physical Education: Luís Bom and Jorge Mira.

Luís Bom innovates because he was the coordinator of the Physical Education (PE) national programs team in 1989 that had breached with the previous logic, not only by the final product, but also by the process used to achieve the main goal that was to organize and stimulate PE at Portuguese schools (Table 6.7). Still today, the structure and principles of these programs are updated.

Table 6.7. Luís Bom innovations

Process	Product	Organization	Marketing
- Participative curriculum based on evidence of research of organizational practices and realities	- Chart program model - Goal structure (aims, cycle goals by skill, goals by subject and levels) - Systematization of subjects by area and sub-area - Program application model: annual class plan by stages and multi-annual - Initial diagnosis and prognosis	- Multi-annual organization - Vertical curriculum throughout schooling; - Curriculum organized by levels - Nuclear and alternative activities	- Submission of program options and decisions (to professional and scientific organizations, universities, schools, experts) - Promotion of options, models and guidelines (including PE values) to Ministry of Education, parents' associations and school management bodies - Dissemination of programs and ongoing teacher training

Jorge Mira innovates because he introduced a different working methodamong PE teachers of a school that is considered a model school in what concerns to the PE national programs achievement (Table 6.8).

Table 6.8. Jorge Mira innovations

Product	Organization	Marketing
- Creation of school sports, which did not exist	- Strong internal dynamics (all teachers participating in classes, mutual training, everyone's involvement in decisions, anticipation in problem solving)	- Dissemination of school sports to students (participant talks to classes directly and challenges them to join the team) - Publicizing students' skills in Physical Education

The factors that most influenced the path of Luís Bom were entrepreneurial attributes (permanent dissatisfaction related with an idealization, tolerance of mistakes and later ability to learn), social factors (feeling of social belonging, membership of a team that shares the same ideals and the social wave that any change causes) and undergraduate training. Brockhaus and Horwitz (2002) also mention dissatisfaction related with job, while the participant refers a general dissatisfaction. Shepherd (2004) also mentions the ability to learn from mistakes as important characteristics in the entrepreneurial process.

> Trust is very important, as in a three-layered dimension: trust the people, trust the process and trust the idea that development underlies the process. The innovation process is likely to turn into development. This is what we have accomplished through the programs. They were set up to serve as a model-structured basis in a long-term duration (Luís Bom). - Translated from the statements in Portuguese.

The factors that most influenced Jorge Mira were related to his undergraduate training, such as fellow students and belonging to reflection groups that began at university. He kept these groups up during his career. Both participants mentioned lecturers in their undergraduate training whose teaching practices, knowledge and subjects stood out. They had three lecturers and subjects in common (Basketball, Judo and Physical Education for schools). Both praised the work in Basketball training because

of its closeness to reality and direct contact with clubs and their relationship with fellow students in the projects that they did together.

Luís Bom highlighted three basic driving forces for his activity in programs: an eclectic education in the different fields of physical activities with special focus on Physical Education for schools, a cultural view of the value of sport and physical activity and, the most important aspect, an assignment on school programs and the contacts and support that he received from the lecturer of the subject.

Jorge Mira felt that the most important aspects at school for his career were not only lecturers, subjects and fellow students, but also the reflection groups mentioned above.

> This was a result of discussion groups, gathered either formally or informally. This call for discussion, for debate, it was such an amazing thing. I have this tendency of getting involved. I cannot stand still simply watching. This is something I have acquired at university. The 25th April has instilled into us the habit of getting involved. So you live in a reality but you have a socially active intervention within that reality (Jorge Mira).
> - Translated from the statements in Portuguese.

Both said that, during their degree courses in the early 1980s, although there was no reference to entrepreneurship, they implicitly developed a number of entrepreneurial skills, such as proactivity, initiative, critical and reflexive thought, as well as projects development, etc. Initiative and projects organization and development is also mentioned by Ferreira, Figueiredo and Pereira (2007) as being important characteristics of entrepreneurs, as well as proactivity (Ratten, 2012).

For their classmates, both PE teachers, undergraduate training was a very fruitful time and instilled entrepreneurial skills like proactivity and that it provided experiences that went beyond the curriculum in terms of human relationships and intellectual development. They said that the gains were reflected in their lives and job performance. They mentioned lecturers and subjects in common with the participants. The classmate of Luís Bom also mentioned the importance of the internship that they did together, which was the beginning of PE program activities. Although this was an aspect that Luís Bom mentioned during the interview, he did not consider it one of the most important.

Undergraduate training played an important role in all the interviewees' career, which can be explained by this period richness, due to the social and political climate in Portugal at the time (after the 25 April revolution in 1974, with the introduction of democracy and the reorganization of principles) and at intellectual and cognitive level, because of access to knowledge that used to be restricted and also the scientific reorganization of the institution.

It is interesting to note that both PE participants mentioned the importance of reflection/discussion groups or the importance to work in a team and share the same ideals, what can be related with *communities of practice* (Wenger, 1998). According to this author, the learning process is a social process and he stresses the importance of communities of practice. These communities are everywhere and develop around things that people consider important and, consequently their practices reflect the community members understanding of what is relevant.

6.4.1.2 Exercise and Health: Teresa Branco and Joana Froes.

Teresa Branco has had a company since 2003. It provides services in the field of weight management, consultancy (Nutrition, Physiology of weight control and Psychology of weight control), interactive workshops and personal improvement courses (Table 6.9).

Table 6.9. Teresa Branco innovations

Process	Product
- Multidisciplinary approach (Psychology, Nutrition, Exercise and even Medicine) - Transmission of content vs. practical application (using cookery classes to teach nutrition) - Scientific grounding of services provided	- Weight loss based on changes on behavior leading to a healthier lifestyle

Joana Froes has had a company since 2009. It provides services in the field of Sports (sporting and recreational activities: Gymnastics for children and young people, Ballet, Jazz, Aerobics and Fitness), Psychology, Child Nutrition and complementary therapies with the main aim of giving the children an opportunity for harmonious development, also addressing the instructors' relationship with children's parents (Table 6.10).

Table 6.10. Joana Froes innovations

Process
- Multidisciplinary approach (Sport, Psychology, Nutrition, therapies) - Non-competitive physical activity in Exercise and Health - Exclusive facility for children and young people (aged 1-17)

The factors that most influenced the path of Teresa Branco were entrepreneurial attributes (importance of knowing how to run her life, set priorities and maintain a balance between her personal and working lives and empathy), professional experience working at health clubs and postgraduate training (especially her PhD and research). She associated her empathy with the professional experience she acquired at health clubs(where she worked from the age of 17 until she set up the company), which contributed considerably to her career thanks to her contact with all kinds of people.

> Delivering aerobics gym classes to people much older than me, and being exposed to a wide diversity of personal traits, made me feel more confident while dealing with people, when it comes to understanding their nature and creating empathy towards them. In my opinion, it is essential to be an empathetic human being, understanding what it feels like to be on the other side, what are the people on the ground going through at that moment (Teresa Branco).-Translated from the statements in Portuguese.

Business experience is mentioned by Jo and Lee (1996) and Davidsson et al. (2011), due to its importance in fostering entrepreneurship, which we can relate with professional experience. The role of social perception in entrepreneurship is emphasized by Baron and Markman (2003), which is in line with the empathy mentioned by the participant.

She also emphasized the role of undergraduate and postgraduate education (master's and PhD). She said that the most important aspect of undergraduate training was the study of the human body and physiological aspects, which she later studied further in her master's degree and PhD. She felt that her PhD and research into weight control were the factors that most influenced her, because of the knowledge she acquired about the object of her company. Another factor mentioned was assistance from their spouse and of a friend in the field of management and fitness respectively.

The factors that most influenced the path of Joana Froes were entrepreneurial attributes (determination, creativity, persistence, dedication to work and self-knowledge), family (support in the decision and in the field of management), undergraduate training and life experience besides training (through work, volunteering, associations). The fact that entrepreneurial attributes for this participant represent the most important factor is probably related with her vision about entrepreneurship, as being mainly personal/innate. She stressed the importance of having a varied range of experiences in different areas of her professional, social and family life. Persistence is also mentioned by Gomper, Kovner, Lerner and Scharfstein (2010), as an important aspect to the success of an entrepreneur, as well as the importance of determination (Lee-Gosselin & Grisé, 1990; Timmons & Spinelli, 2007), and creativity (Ronstad, 1985; Ray, 1993; Baron & Shane, 2007) in fostering entrepreneurship.

> Joana describes an episode in the middle of a practice:
> - Joana: Come sit next to me. You don't feel like training today, do you? What's the matter?
> - Student: Nothing Joana, nothing…
> - Joana: So, would you like to help me instead of training? Just enjoy this hour, no need to think. This time is yours… then you leave and the problems are still there.
> I talk to them like this, especially to the teen girls who are going through that awesome period…"My best friend this or that". So I tell them: here at the class there are no problems, it is the best time of your day. Enjoy! (Joana Froes). -Translated from the statements in Portuguese.

Where undergraduate training was concerned, several lecturers and subjects were referred. However, two lecturers and their subjects (Biomechanics and Training Methodology - Gymnastics) were emphasized, due to their importance to her career, not only related with the knowledge transmitted, but also because the entrepreneurial attitude they foster. She also mentioned the importance of her internship, as it contributed to this growing feeling of self-confidence and self-efficacy because her internship advisor gave her a job involving considerable responsibility. Self-confidence (Heinonen, Poikkijoki & Vento-Vierikko, 2007; Soetanto, Pribadi & Widyadana, 2010)

and self- efficacy (Krueger & Brazeal, 1994; Chen, Crick & Greene, 1998) are some of the characteristics associated with an entrepreneurial profile and were essential to this participant's career. In general, she praised her university because it encouraged its students, believed in their abilities and provided good preparation for the employment market.

Although these participants graduated at around the same time with an orientation towards teaching Physical Education in the early 1990s, they have different perceptions. Teresa Branco felt that there were no aspects that promoted entrepreneurship, while Joana Froes said that there were a number of activities that fostered entrepreneurial characteristics, although there was no talk of the concept at the time. This divergence may be justified by each one's predisposition with regard to these aspects.

Their classmates, both PE teachers, said that undergraduate training was not a reference and it was difficult to pinpoint aspects that marked them. However, like Teresa Branco, her classmate also highlighted human relations and, contrary to Teresa Branco she emphasized the importance of internship to her career, as a Physical Education teacher. Like Joana Froes, her classmate mentioned the Gymnastics teacher and his subject, because of the knowledge imparted and their pedagogical practice. She also mentioned other teachers and Education Science and Physiology subjects that contributed to her career, as well as some bad experiences related with teachers and with curricular changes, which influenced negatively her experience during undergraduate training, which is contrary to Joana Froes experience. Both said that they had thought of opening their own businesses but that it had not happened for several reasons, and other, equally attractive professional opportunities arose later.

Teresa Branco criticizes universities, arguing that they should prepare students for professional life, that is very hard, namely in the beginning. She says this based on her experience with students doing internships in her company:

> The fact that I had always worked in my life played a fundamental role and if you ask me whether I learned less because of that, surely not! Everything is feasible, the most outstanding students were the ones who

stood for great ideals and who were high performance athletes. So, everything can be done and life is hard, youngsters are not prepared for that. Many of them enter the world of work having no clue about what it means to work (Teresa Branco).- Translated from the statements in Portuguese.

6.4.1.3 Sports Coaching: Fernando Marques and José Mourinho.

Fernando Marques set up a company in 1989 and sold it to another company in 1999. The services provided were computer graphics for TV (broadcast news, etc.), online sports information and game statistics for sports. For the first time they connected a computer to an outside cable or a production board, at national and international level, so that they could obtain fast information and post it on television in real time (Table 6.11).

Table 6.11. Fernando Marques innovations

Process	Product	Organization
- Use of computers and new technologies in environments where they traditionally did not exist (Sports and TV)	- Sport website - Game statistics for Sports - Computer graphics for informative programs - Information for the general public (TV and press)	- Participative management; - Conversion of employees into intrapreneurs in the organization

José Mourinho is one of the most respected Football coaches nowadays. He is considered a born leader with a great capacity for anticipating and controlling aspects of training. He is an excellent practitioner and applies different areas and levels of knowledge to his job in order to achieve results. He was a pioneer because the new work principles that broke away from traditional models of physical training (Table 6.12).

Table 6.12. José Mourinho innovations

Process
- Communication (club, players, media) - Leadership by competence - Training methodology/ reducing unpredictability of the game

The factors that most influenced the path of Fernando Marques were entrepreneurial attributes (the adoption of a reflexive, proactive attitude to life, which

was reflected in all areas, changing different realities), contact with a professional environment (top-level sport and contact with distinguished coaches who influenced his way of looking at the world), contextual and social factors (contact with computer science), family (entrepreneur parents) and continuing education (permanent training to keep up to date using self-education rather than structured training with certification).

> The leading motive is doing something, transforming somehow an existing reality. An entrepreneur is someone who places themselves slightly higher, in order to have a look at the top and figure which value can, indeed, be added to what we already have. I think this is their main feature; they are continuously trying to perceive what might be different about things. I believe it's about an attraction to transforming, to changing things. Whenever I find myself wandering around a context in which I add no value, I choose to leave… for the better (Fernando Marques). -Translated from the statements in Portuguese.

Delmar and Davidsson (2000) also stress the influence of self-employed parents in the development of entrepreneurial characteristics, and Krueger and Neergaard (2012) also mention the competition sports' influence. Several authors (Aldrich, Renzulli & Laughton, 1997; Delmar& Davidsson, 2000; Fry, Stephens & Van Auken, 2006; Soetanto et al., 2010) stress the importance of role models in entrepreneurial paths, what is in line with the participant testimony about the influence of computer science experts. On the other hand, this participant concern for keeping up to date is also shared by Tavares (2003), who highlights the importance of lifelong learning and adds that higher education should prepare young people for these aspects and to seek knowledge independently. Proactivity is also mentioned by Ratten (2012).

The factor that most influenced José Mourinho was his entrepreneurial attribute of acquiring knowledge in different areas and the capacity to transfer it to training, thereby improving skills at this level.

> I am really proud of having created an easier path for the beginners, the ones that come from outside the *tribe*, and for actually conveying the message that there is no need to be a part of the tribe in order to succeed.

> Even if one has been a professional player for a lifetime, that might not be enough a requirement to succeed. I used to feel pleased about the fact that those newcomers, representing the future, would have a totally different, enhanced training than I was given (José Mourinho). - Translated from the statements in Portuguese.

Where undergraduate training was concerned, although Fernando Marques said that it had no direct influence on the company, he stressed the importance of some Education Sciences lecturers because of the innovative nature of what they taught him (and how they taught: e.g. through projects development, events/conferences organization) with regard to observation in the classroom and the importance of gathering information. He transferred this knowledge to training (observation of the game), the initial purpose of his company. He also said that his internship at schools was one of the reasons why he gave up the idea of teaching because he realized that it was something that he could not change.

José Mourinho, on the other hand, highlighted the importance of a Philosophy teacher, because he told him that there were things that he might not understand at the time but that he would understand one day. This was in fact the case, as there were aspects that he learned then and later transferred to training. He did not highlighted any individual subjects and said that they all helped him to acquire the skills that were reflected in his training work (e.g. in the subject of Learning Techniques he learned different learning styles that he further applied in football training). However, he stressed the importance of the Football Training Centre, where he continued his work as a coach, because it constituted his team and a competitive setting. If he had depended on the options offered by FHK, he would have been more limited. In general, he felt that FHK did not create the right conditions for getting a job and that this was the greatest obstacle when he joined the world of Football training.

It is interesting to analyze the differences in opinions on training centers (Basketball vs. Football) and the preparation that university gave for finding jobs in the different areas. In Physical Education and Sport Training (Basketball and Gymnastics), practice at university boosted future professional practice and employment, unlike

Football. This probably happens because Football has a higher closed culture and being part of this world is more difficult than in other sports (Pacheco, 2005).

Both participants said that there were no aspects promoting entrepreneurship during the course. Fernando Marques was at university at a time when other participants said that there was an environment conducive to the development of entrepreneurial skills, though he did not think so, perhaps because he was totally absorbed by top-level training and did not make the most of academic life.

Where their classmates were concerned, participant 5 classmate valued other aspects of his work as a PE teacher. He said that there were Education Science subjects to make the curriculum "pseudo-scientific", though Fernando Marques was of the opposite opinion and stressed that these subjects were important to his career, due to the innovative nature of the knowledge. This divergence in opinions may be justified by the way in which each of them regarded Education, one in a traditional way and the other as a field for innovation and transformation.

The classmate of José Mourinho highlighted three teachers in Football and the Football Training Centre where, like José Mourinho, he built and trained his own team instead of being dependent on the conditions offered by the university. He was also of the opinion that the university was out of sync with the reality of Football Training and did not prepare him for the employment market. He said that some teachers were important football coaches, and that was something positive for the employment market of Football coaching, however it was not enough to close the existing gap between theory and practice in the field.

It is interesting to analyze and reflect on the fact that José Mourinho, a professional Football coach, did not mention any teachers in this area, as opposed to his classmate, at a time when both played football while they were at university, though subsequently made different professional choices (training vs. teaching). This may be justified by the fact that certain people served as role models for some and not for others, on the basis of each one's references and the skills that they ascribe to them.

Fernando Marques criticizes hardly actual schools, especially in teaching and learning process, arguing that they should prepare students to reflect and to be more proactive:

> In my view, we hardly ponder on things, most people simply go through life… on the surface, they go along the pathways that need to be covered, that they are forced to cover, not reflecting thoroughly on the places they are coursing, and school is like that. For instance, school claims for itself the ability to transform people, and in reality it cannot. Then it regards individuals as if they were all similar to each other, and in reality it is totally the opposite (Fernando Marques). -Translated from the statements in Portuguese.

6.4.1.4 Sports Management: José Beirão and António Sacavém.

José Beirão has had a company since 1999. It provides services in the area of building maintenance, consultancy, training, inspections, non-destructive tests, technical installations at height, cleaning services and restoration and conservation of historical heritage (Table 6.13).

Table 6.13. José Beirão innovations

Process	Product	Organization
- Method for access in work at height – by industrial rope	- Services not existing on the market made possible by access by rope thanks to speed and the price factor - Creation of a new occupation: "Industrial Rope Access Specialist"	- Conversion of employees into intrapreneurs in the organization /group of companies - Sharing of common costs (premises, image, brand, front and back office, human resources, information, customers …)

António Sacavém was discovered by a Sports Management headhunting company. He combined his professional experience of Fitness with his academic education and added Management skills to undergraduate training. He currently holds an executive and management position with an original, respected, newsworthy health club (Table 6.14).

The factors that most influenced José Beirão were undergraduate training, family (values instilled during childhood and his house with green spaces where he could play and experience his kinetics and intelligence) and, contact with the professional milieu (martial arts and the qualities they helped to develop as willpower, determination, acceptance of confrontation). He felt that the last two were the most important. Isn't it possible to think in a sports context to foster entrepreneurship, even indirectly, in all age groups? Krueger and Neergaard (2012) also emphasized the importance of competition sports.

Table 6.14. António Sacavém innovations

Organization	Marketing
- Restructuring - Clean structure - Mindsetting - Philosophy of ongoing improvement - Organizational culture - Inclusion of values - Clarification of organization's vision and values	- Rebranding - Innovative options of service (2 twice a week) - Pricing policy

> I had a wonderful childhood, I was raised and brought up by three women, my aunt, my grandmother and my mother, who had given me so much care, and at the same time had offered me the basis to understand a whole set of other important aspects, such as responsibility. On the other hand, being given as a child the opportunity to live in a house with open, green spaces and trees all over has nurtured and stimulated a creative intelligence, as well as the ability to formulate thinking towards action. Another period I consider to have been decisive is the one related to my journey in sports, in combat sports (José Beirão). -Translated from the statements in Portuguese.

The factors that had the greatest influence on António Sacavém were entrepreneurial attributes (persistence, humility and enthusiasm). Humility and enthusiasm are also mentioned by Toftoy and Jabbour (2007) as important characteristics in an entrepreneurial profile as well as persistence (Timmons & Spinelli, 2007; Gompers, Kovner, Lerner & Scharfstein, 2010).

> Indeed, we are guided by the continuous improvement philosophy and this demands a daily innovation. It is not necessary a huge innovation to

> take place, smaller improvements can make a difference. In my opinion, we learn better from failure than from success. Therefore, what I want to emphasize is that, above all, entrepreneurship and leadership are rather a matter of team's work than of an individual's (António Sacavém). - Translated from the statements in Portuguese.

Where undergraduate training was concerned, José Beirão mentioned the influence of a lecturer of Sports Coaching, whose attitude (to sport and to life) marked him considerably. He drew his attention to the fact that his job opportunities were not limited to teaching, opened his eyes to other prospects and helped him play an active role in the construction of his future career and even invited him exclusively to participate in a project out of school. He also mentioned two other Sports Management lecturers who influenced him and gave him opportunities to participate in projects, as well as the influence of the example given by some fellow students with entrepreneurial projects. He also set great store by a subject on the organization and implementation of projects on sports area, which tallies with other authors (e.g. Ferreira, Figueiredo & Pereira, 2007). In general, he said that the greatest wealth came from prolonging contacts (teachers and classmates) made at university at an informal level.

António Sacavém stressed the importance of some Sports Management and Statistics lecturers, two of whom were also mentioned by José Beirão, because of their challenging attitudes, initiative and projects, encouragement and support and the subjects that they taught. He also referred to the importance of his internship in Newcastle and generally highlighted what he learned in Exercise and Health and Management, which are useful in his current occupation. The importance of internships abroad may be justified by contact with other realities and different ways of learning, with all that this involves. It is also reflected in broader horizons, awareness of diverse solutions and personal organization and initiative, all aspects that can be associated with entrepreneurship.

José Beirão said that there were no aspects that fostered entrepreneurship during his degree course except his internship in the area, while António Sacavém, who

graduated a year later, in 1996, took advantage of his specialization in Sports Management, which addressed the subjects of setting up and developing a company.

The classmates of José Beirão e António Sacavém did not express any agreement with the aspects that they highlighted. Both mentioned different subjects and teachers that were related to their current occupations in the areas of Sport Psychology and Physical Education and Fitness. Unlike José Beirão, his classmate said that the teacher who had left his mark and encouraged him to set up a company had inadequate teaching practices and that he did not recognize his competence. This may be justified by the impact of the discourse on setting up a business at the time on the different students, when those who were motivated by the idea saw him through different eyes from the others who criticized him. It is also interesting to highlight that the classmate of António Sacavém mention that the most important in the undergraduate training it was the informal curriculum and the passion they felt by the institution.

The participants said that their internship was important in undergraduate training and contributed to their careers and initiatives, though for different reasons: positive for most participants, as it help develop different skills, but negative for Fernando Marques e Teresa Branco pushing them to set up his company. These participants also presented a negative vision about schools and universities today, which can be related with their negative experience in internships, besides their actual experience that grounds their vision (Fernando Marques through his children and Teresa Branco through her trainees).

In general, our interviews with lecturers revealed the following about this period:

- The absence of explicit initiatives to set up and develop companies, as this was not the predominant culture at the institution, except latter in the Sports Management course;
- The fact that it was a very fertile period with informal experiences that coexisted with and strengthened the formal curriculum;
- Lecturers' personal characteristics (e.g. concern, commitment, dedication, motivation, command of subject matter, approachability, thoroughness,

innovation, creativity) that were reflected in the quality of their teaching and human relations;

- Fostering a culture of independence, responsibility and critical thought, in which some lecturers challenged the students to build their own business;
- Though without talking about entrepreneurship, instilling in their subject matter (and outside it) skills that today are associated with the concept (e.g. proactivity, capacity for critical thought, innovation, problem solving, leadership);
- Group work and projects in the practical classes and sometimes contact with the professional world for direct experience of reality;

We present some excerpts of their testimony, reflecting their intentions and mindsets:

> I think the most important is that people pass on something to their pupils, pass on the knowledge they hold. Then, it is about building personal relationships, which is somewhat underrated nowadays, yet it truly affects everything else (Lecturer 3). -Translated from the statements in Portuguese.

> I used to offer them challenges, to unbalance their comfort zone, so as to enhance their self-esteem and motivation to go beyond those challenges and face new ones, being therefore better prepared for what I consider to be the social and professional challenges (Lecturer 9). -Translated from the statements in Portuguese.

Lecturers' characteristics and attitudes to knowledge and the learning process in relation to formal and informal curriculum, contributed to our entrepreneurs, addressing directly this new option or way of life, or indirectly, by means of the development of entrepreneurial competences that proved useful, leading to a need to systematically improve realities. It is interesting to note that informal curriculum is emphasized.

Many of these aspects tally with what the participants said, which leads us to an approximation between the curriculum planned and operationalized by the lecturers and that experienced by the students. In other words, between the lecturers' intentions

and their actual perception of what they do and what the students actually assimilate as a result of their teaching, showing self-sufficiency in their teaching activity.

Many teachers had entrepreneurial characteristics and ended up serving as role models for the students, what is in line with Aldrich et al. (1997), Delmar and Davidsson (2000), Fry et al. (2006) and Soetanto et al. (2010) who mentions the influence of entrepreneurial role models. Some of the practices and principles abided by guidelines encouraging an entrepreneurial culture in tertiary education, such as those suggested by Ferreira, Figueiredo et al. (2007). In general, we found that undergraduate training was important to entrepreneurs/intrapreneurs, which agrees with Naia (2009).

As this analysis shows, the triangulation among data sources (entrepreneurs/ intrapreneurs, classmates and lecturers) produce converging solutions in three cases (Luís Bom and Jorge Mira; António Sacavém) and diverging solutions in the other cases (José Beirão; José Mourinho and Fernando Marques; Teresa Branco and Joana Froes). The higher difference is between entrepreneurs/intrapreneurs and their classmates, what can be explained by their different professional choices and occupations. All classmates are teachers (four Physical Education teachers and one university teacher) and they value most those subjects and lecturers related with contents and teaching process and skills.

As we can see, most of entrepreneurs/intrapreneur's activities had/have an important social value, more than just personal wealth, which tallies with Ratten (2012).

6.4.2 Cross-case pattern search.

> Coupled with within-case analysis is cross-case search for patterns (…). One tactic is to select categories or dimensions, and to look for within-group similarities coupled with intergroup differences (Eisenhardt, 1989, p. 540).

In Table 6.15 we can see all the factors that influence entrepreneurs/ intrapreneurs' paths, according to their own perceptions and the main purpose, following Eisenhardt (1989) suggestion, is to find main similarities and differences.

Table 6.15. Factors that influence entrepreneurs/intrapreneurs' paths

Subcategories		LB	JM	TB	JF	JM	FM	JB	AS	**T**otal
Category. A |Entrepreneurial attributes										
Determination					■					**6**
Motivation										**6**
Diversified and updated knowledge						■				**5**
Perseverance/Persistence					■				■	**5**
Reflexive and proactive attitude							■			**5**
Creativity					■					3
Humility and enthusiasm									■	3
Initiative										3
Innovation										3
Leadership										3
Resistance to adversity/tolerance to mistake		■								3
Risk-taking propensity/risk analysis										3
Self-confidence										3
Anticipation										2
Availability/dedication to work					■					2
Comprehensive view of the world/life experience					■					2
Concern										2
Opportunities identification										2
Oral communication										2
Self-efficacy										2
Social perception (perceiving others)				■						2
Authenticity										1
Dynamism										1
Learn with failure										1
Organization/priorities management				■						1
Problem solving skills										1
Self-knowledge					■					1
Wisdom					■					1
Category. B |Family										
Spouse/family support: in decision making					■					4
Childhood/values instilled								■		3
Entrepreneurs in the family							■			2
Exposure to family business/activities										1
Other influence from family										1
Spouse/family support: in the field of Management					■					1
Category. C |Contact with professional context										
Professional experience				■						4
Competition sports/ values instilled							■	■		3
Projects organization and participation										3
Associative movement										2
Category. D | Social and contextual factors										
Job or general dissatisfaction/desire for change		■								4
Networks										3
Other people's influence/role models							■			1
Social belonging		■								1
Support: Financial										1
Support: Friends										1
Category. E |Undergraduate training										
Formal curriculum	**Lecturers**	■	■		■	■				**7**
	Subjects/contents/Internships	■	■		■	■			■	**7**
Informal curriculum	Classmates		■							4
	Reflection groups		■							3
	Activities/Projects	■								2
Category. F |Continuing training										
Conferences/workshops										3
PhD/research activities				■						1
Post-graduate training										1
Self-training							■			1
Total factors mentioned by each participant		18	12	**20**	17	15	16	16	**24**	

■ Most important factors mentioned by participants which influenced their paths

Factors mentioned by participants which influenced their paths

First, we clarify some subcategories and then we explain main patterns found through this analysis.

Risk-taking propensity/risk analysis was mentioned by Luís Bom, José Beirão e António Sacavém and they all claim to be risk-takers, although they analyze and reflect in that risk and try to find most efficient ways to achieve it.

Fernando Marques emphasized the importance of having a comprehensive view of the world, understanding different phenomena, from different fields, which contribute to the whole. Joana Froes highlighted the importance of life experience besides training and formal education. In subcategory *Spouse/family support in decision making or in the field of Management*, Joana Froes and Teresa Branco emphasized the support from their spouses and family to the decision of creating the company; Joana still mentioned the support of her brothers in the field of Management, and Teresa Branco the support of her husband in the same field. Teresa Branco still said that it was very important the existence of obesity problems in her family, what justifies the subcategory *Other influence from family*. Fernando Marques said that the people and scientists he meets in the field of informatics were also very important, providing the acquisition of knowledge, justifying thereby the subcategory *Other people's influence/role models.*

The most referred categories were: entrepreneurial attributes (determination, perseverance/persistence, motivation, reflexive and proactive attitude, diversified and updated knowledge) and undergraduate training (lecturers and subjects/contents/internships), reflecting thereby the importance of these factors in the promotion of entrepreneurial paths. There are categories not mentioned, such as: family (for Luís Bom and Jorge Mira), social and contextual factors (for Jorge Mira) and continuing training (for Jorge Mira, Joana Froes and José Beirão). This can be explained by the importance that other categories had in the entrepreneurial paths of these participants (Table 6.15).

The entrepreneurs/intrapreneurs highlighted two main types of skills acquired in different contexts and contributed to their paths: (a) management/entrepreneurial skills (acquired from spouse working in management, sports, professional experience, participation in projects and activities in which it is necessary to take the initiative) and

(b) technical and scientific skills related to the company's area of activity (acquired in a context of formal or non-formal education). This highlights the importance of promoting these types of skills in higher education, thereby providing tools for future entrepreneurial projects and initiatives.

In what concerns within-group similarities coupled with intergroup differences and given the research questions, according to the organizer *training* combined with factors that most influenced entrepreneurs/intrapreneurs paths, the system of analysis allowed creating different profiles.

As we can see in Table 6.16, most participants' value training and according to their perceptions, we can find three distinct patterns: prevalence of undergraduate training, prevalence of continuing training and prevalence of family and contact with professional context. However it is important to emphasize that all participants mention the importance of undergraduate training in their lives. Even José Beirão said it was important, although not the most important, what is in line with Delmar and Davidsson (2000) and Ferreira, Raposo and Rodrigues (2007) which stress the importance of education in the entrepreneurial process. It is interesting to analyze that entrepreneurs value most continuing training and intrapreneurs' undergraduate training.

Table 6.16. Entrepreneurs/intrapreneurs' profiles

Profiles		**Participants**
Prevalence of undergraduate training	Undergraduate training	Jorge Mira
	Undergraduate training and entrepreneurial attributes	José Mourinho António Sacavém
	Undergraduate training, entrepreneurial attributes and social/ contextual factors	Luís Bom
	Undergraduate training, entrepreneurial attributes and family	Joana Froes
Prevalence of continuing training	Continuing training, entrepreneurial attributes and contact with professional context	Teresa Branco
	Continuing training, entrepreneurial attributes, family, contact with professional context and social and contextual factors	Fernando Marques
Prevalence of family and contact with professional context		José Beirão

Depending on entrepreneurs/intrapreneurs paths and innovative activities in different areas, it was expected that they value issues of undergraduate training related

to those areas. That happens with everyone, except José Mourinho, that stresses the importance of a Philosophy teacher, instead of his football lecturers. This case can be seen as a negative case (participant's choices are contrary to the expected, according to his professional path in the field of football coaching). Through the analysis of similarities and differences across cases and according to Miles and Huberman (1994), the presence of negative/contrasting cases is important to strengthen a theory.

Table 6.17. Patterns identification

Participants	Innovation	Profiles	Entrepreneurship Intrapreneurship
Luís Bom	Product, process, organizational and marketing	Prevalence of undergraduate training	Intrapreneur
Jorge Mira	Product, organizational and marketing	Prevalence of undergraduate training	Intrapreneur
Teresa Branco	Process and product	Prevalence of continuing training	Entrepreneur
Joana Froes	Process	Prevalence of undergraduate training	Entrepreneur
José Mourinho	Process	Prevalence of undergraduate training	Intrapreneur
Fernando Marques	Product, process, organizational	Prevalence of continuing training	Entrepreneur
José Beirão	Product, process, organizational	Prevalence of family and contact with professional context	Entrepreneur
António Sacavém	Organizational and marketing	Prevalence of undergraduate training	Intrapreneur

Besides Table 6.16, we search for other patterns (innovations, profile and entrepreneurship/intrapreneurship), looking for similarities and differences between participants, although we did not found other patterns in this sample (Table 6.17).

We followed a replication strategy, with literal replication, inside entrepreneurs group and intrapreneurs group, because despite presenting different paths and valuing distinct factors in their paths, the result is the same: innovation (entrepreneurs: through the development of innovative organizations; intrapreneurs: innovating within developed organizations). Theoretical replication can also be observed through the contrast between entrepreneurs and intrapreneurs, which have a predictable

justification: each participant value the type of entrepreneurship related with activities they wanted to develop or in which they innovated.

In overall, our findings can be interpreted as an expression of degeneracy or behavioral equivalence within the field of entrepreneurship education. *Degeneracy* can be defined as "the ability of elements that are structurally different to perform the same function or yield the same output" (Edelman, & Gally, p. 2001). It is simultaneously a necessary condition for, and an outcome of natural selection. Degeneracy is present in all levels of biological organization, from the genetic code to behavioral and even complex social levels, and was recently suggested as a mechanism explaining the divergent dynamics of talent development and expert performance in sport (Phillips, Davids, Renshaw, & Portus, 2010).

Our proposal is that each entrepreneurs/intrapreneurs should also be seen as a complex system where the concept of degeneracy allows understanding the multiple and structurally divergent processes underlying their successful paths. Also, when comparing our entrepreneurs/intrapreneurs sample with their immediate classmates, a different understanding and integration of information emerged, mostly influenced by previous experiences, motivations and ideals. A different level of ability in the way they manage information and transfer information from one field to another seemed crucial. Besides the different paths and experiences, our participants achieved similar behavioral outputs: to innovate and create value in their specific fields.

This study revealed factors mentioned by the participants as having influenced their paths and the promotion of entrepreneurship that were not found in the literature review, as such:

- The influence of some entrepreneurial attributes (resistance to adversity, self-knowledge, dynamism, dedication to work, wisdom, concern, authenticity, priorities management, reflexive attitude and comprehensive view of the world);
- The influence of family, through the transmission of attitudes and values from childhood and the support given by spouses in the decision of developing a new venture or in the field of management;

- The influence of the associative movement during and after undergraduate training;
- The impact of undergraduate training, even when not expressly aimed at entrepreneurship;
- The importance of continuing education in providing more specialized support for entrepreneurial initiatives;
- The feeling of social belonging (membership of a team that shares the same ideals and the social wave that any change causes).

6.4.3 Implications for theory and practice.

The present study has interesting findings from both a theoretical and a practical point of view. Theoretically, it lends further support for empirical research in the field of entrepreneurship, about factors which influence entrepreneurs/intrapreneurs, introducing novel perspectives in the field of sports entrepreneurship.

From a practical perspective, the results provide practitioners several guidelines to improve undergraduate curriculum. The promotion of entrepreneurship education and the introduction of entrepreneurial competences in undergraduate curriculum emerge as something fundamental in order to prepare young people for professional and social demands. Several traits, skills and knowledge were mentioned by the entrepreneurs/intrapreneurs who will allow to an entrepreneur to perform a task successfully within sports field. These recommendations could also be followed in other higher education settings. Many are already being applied at some but not all institutions, and a lot remains to be done in this regard.

In what concerns communities of practice, they constitute a social learning strategy which concerns for organizational leaders, educators and people in government and international development (Wenger, 1998). We suggest that these communities evolve policy makers, educational leaders and entrepreneurship educators, with the main purpose to foster entrepreneurial competences in undergraduate curriculum. Table 6.18 presents several suggestions to promote entrepreneurship education.

Table 6.18. Suggestions to promote entrepreneurship education

Participants' suggestions		
Suggestions	**Formal curriculum**	**Informal curriculum**
Promote contact with companies and work (study visits to companies operating in the students' future career areas) and promote joint assignments between the entrepreneurial or professional and university worlds	X	
Foster the sharing of experiences with entrepreneurs (invite businesspeople from different areas to share their experience with students, analyze examples of success and failure)	X	X
Introduce entrepreneurial competences in subjects	X	
Promote specific entrepreneurship training and optional activities related to entrepreneurship (an optional subject on entrepreneurship and setting up a company for each course, including entrepreneurs from different areas in the teaching staff, optional subjects during internships dealing with these aspects)	X	X
Foster projects (introduce a subject organized from start to finish on the basis of a project to be presented at the end and simulations or real-life projects that instil planning and organization skills, as well as communication skills)	X	
Encourage proactivity and capacity for reflection during classes, giving students problems to solve, getting them to think about and act on them and propose different solutions, thereby fostering a culture of responsibility, autonomy, assimilation of knowledge and humility with regard to new learning	X	
Promote university sports		X
Foster self-training	X	
Authors' suggestions		
Promote themed reflection groups outside class		X
Encourage students to participate in university exchange programs abroad	X	
Use universities as company incubators		X
Develop communities of practice	X	

6.4.4 Areas for further research.

Whilst recognizing the seminal work of Ratten (2011), sports entrepreneurship in undergraduate curriculum remains a significant area of study. Despite the limitations, the findings suggest several directions for further research.

- The need of more studies on entrepreneurship education in higher education, focusing on sport and other areas that are not usually studied in association with the concept;

- Analyze the impact of undergraduate training on entrepreneurship education in longitudinal studies;
- Analyze the importance of formal and informal curriculum for the entrepreneurial success;
- Study the influence of sports (especially top-level and combat sports) and the qualities developed when nurturing entrepreneurship;
- Examine the relationship between student associations and the promotion of entrepreneurship and understand to what extent they can be regarded as incubators of future entrepreneurs;
- Analyze the influence of experience of education abroad on fostering entrepreneurship;
- Examine the life histories, especially childhood, of entrepreneurs and non-entrepreneurs, to see which factors in this period facilitate and obstruct the decision to set up a company;
- Invest in parent training to foster the transmission, during childhood, of initiative, innovation and creativity, which may be reflected in an entrepreneurial career later in life;
- Invest in training teachers in entrepreneurship education;
- Analyze the social complexity of entrepreneurship and the link between entrepreneurship/intrapreneurship and social behavior;
- Additional research is required to evaluate the influence of some entrepreneurial attributes (resistance to adversity, self-knowledge, dynamism, dedication to work, wisdom, concern, authenticity, priorities management, reflexive attitude and comprehensive view of the world).

6.5 Conclusion

The main purpose of this study was to ascertain the role that undergraduate training in sport sciences can play in entrepreneurship. We valorize entrepreneurs/intrapreneurs perception about their paths, and all the research is contextualized according to the uniqueness of each path and to the existence of different experiences in their lives.

This work characterized different innovations made by the participants in the field of Sport Sciences, reflecting the quality of the work done and the growing range of services of excellence. Different factors were referred to as influencing the participant' entrepreneurial life course (entrepreneurial attributes, family, contact with professional setting, social/contextual factors, undergraduate training and continuing education, such as postgraduate training and self-education), revealing the importance of their education experience.

Where the influence of undergraduate training on the entrepreneurs' paths was concerned, some mentioned the importance of the subjects and contents and their direct application to entrepreneurial activity and their company object or activities fostering entrepreneurial characteristics. Lecturers were also mentioned because of their attitudes, encouragement, support and sharing of life experiences and because they acted as role models. Fellow students were also important due to their direct support or even the entrepreneurial example that they set. Informal activities and projects were also examples that inspired them to take the initiative. Finally, internships in Portugal or abroad were mentioned as positive or negative experiences that, either way, encouraged different initiatives.

As we can see in the analysis, in undergraduate training, both formal and informal curriculum were valued by participants, and sometimes, the informal curriculum were much more important and sometimes it was not possible to separate these two curricula. Probably because the institution was being created and developed, and there was a very rich and intense experience between lecturers and students, where the greatest wealth came from prolonging contacts (lecturers and classmates) made an informal level.

The fact that undergraduate training encouraged an entrepreneurial career for some of the participants, marking the difference in the contexts that they experienced, but not for some classmates, probably has to do with subjective elements which distinguish each one of us, such as past experiences or personal characteristics (influencing their receptivity and the way they assimilated and later used knowledge) and some people's predisposition for taking certain paths characterized by higher or lower risk, each person's ambitions, ideas and choices of occupation and the

opportunities they have had in their lives. By becoming aware of these subjective elements that underlie entrepreneurs/intrapreneurs choices, they can more insightfully evaluate their readings of their environment, opportunities and strategic choices.

While in the past, even without any specific entrepreneurship training at the institution, undergraduate training eventually played a vital role in the careers of alumni, today's entrepreneurs, why not formalize some of these aspects in order to make an explicit, intentional contribution to an entrepreneurial culture?

Such as Ratten (2012), we appeal for the promotion of entrepreneurial competences in the sport sciences context, allowing that sports entrepreneurs increase, as well as their social value. If there is to be effective change here, it is necessary to continue to raise the awareness of higher education institutions, where lecturers occupy a special place, through formal and informal curriculum. The idea is to encourage students to be innovative and professionals of excellence in their jobs, whether or not they have created them themselves. To change curriculum it is important to analyze information from different sources (Wolf et al., 2006): formal and informal curriculum (through entrepreneurs/intrapreneurs testimony), planned and operational curriculum by lecturers and experienced curriculum by students.

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Appendix 1

Table 6.19. Interview Guide – Extra-academic factors per interviewed participant (entrepreneurs, intrapreneurs and non-entrepreneurs)

Company [Entrepreneurs]	
To characterize the triggering motivations of business activity and the first initiatives	– When and why did you start thinking of setting up a business? Which were the main motivations? – Why were you compelled to set up a company in order to develop your initiative? Was that the only way to make your concept operational? – What were the first initiatives taken towards your purpose?
To characterize the participants' business activity and the type of innovation offered	– How was your company established and organized? How old is it? – How many business partners are there in the Management Department? Did any of them assume a major position? – How many employees did the company hold at its foundation and how many employees does it currently hold? – What is the company turnover? How did it evolve? – Which aspects do you consider to have been your company's foremost innovations? Is it in respect of the product, the process, the organization or the marketing? – Besides the company, do you hold any other professional activities? If so, which?
Company [Non- Entrepreneurs]	
To characterize the entrepreneurial intentions	– Why didn't you consider of setting up your own workplace? – If you considered, why didn't you create it?
Activity [Intrapreneurs]	
To characterize the triggering motivations of their activities and the first initiatives	– When and why did you start thinking of developing this activity? Which were the main motivations? – What were the first initiatives taken towards your purpose?
To characterize the participants' activity and the type of innovation offered	– How was your activity developed? Alone or with colleagues? – Which aspects do you consider to have facilitated your activity within the organization? – In which aspects do you consider that your activity innovated? At the level of product, process, organizational or marketing? – Why did you choose to innovate within an organization and not creating your own organization to this purpose? – Do you have other professional activities besides your current main work? Which ones?

Table 6.20. Interview Guide – Common extra-academic factors to entrepreneurs, intrapreneurs and non-entrepreneurs

Contact with the professional environment	
To analyze the importance of keeping contact with the professional environment along the participants' path: - Professional experience - Projects promotion and development - Engagement in associative movement	– At what age did you start working? In which area/job? How long did you keep the position? – How important do you think that experience was to your path? Why? – While attending your degree at Faculty of Human Kinetics, did you take part in any activities outside the academic scope? If so, did any turn out to be helpful in developing a business vision and management skills? Explain to what extension. – Have you participated in or promoted any type of projects? Do you consider it to have been important to your path? Why? – Did you engage in associative movements? Do you consider it to have been important to your path? Why?
Personal Attributes	
To analyze the importance of personal attributes to the participants' path	– Had any of these personal attributes been relevant to your path: determination, motivation, self-efficacy, creativity, risk-taking propensity?
Family	
To analyze the influence of family on the participants' path	– What is your parents'/spouse's position concerning self-employment? Did they either support or influence you? In what ways? – Is there any member of your family who has gone through a path similar to yours? Who?
Social/environmental factors	
To analyze the influence of environmental factors (supports and barriers) on the participants' paths	– Which factors (resources, assets, partnerships, networking, training…) have contributed to your company set-up/activity? – Have you encountered any obstacles/difficulties along the way? Which were they and how did you manage to deal with them? – Give examples of real situations that might have occurred.
Most relevant factors	
To establish a hierarchy for aspects/factors that were likely to have influenced the personal path	– If you were to choose the aspect which might have influenced your entrepreneurship path the most, what would it be? – If you were to set the several aspects in order, what would that order be?

Table 6.21. Interview Guide – Common academic factors to entrepreneurs, intrapreneurs and non-entrepreneurs: impact of the undergraduate training

Undergraduate training	
To analyze the participant's motivations to apply for Sport Sciences at Faculty of Human Kinetics	– If you could decide again, would you still choose the degree in Sport Sciences at Faculty of Human Kinetics or would you choose a different faculty or a different course? Why?
To analyze the intrinsic factors and conditions within the formal curriculum influencing the development of entrepreneurship	– What aspect within your degree might have been of any use in terms of preparing for business start-up and management? – Was there any subject/lecturer that you consider to have been important to your path? Why? – Was there any subject matter where entrepreneurial competences have been promoted? Even either implicitly or indirectly (for instance, encouraging students to create something new when working in groups? To innovate? To generate profit from it?)? – Would you like to share any experience from your internship/ investigation seminar that had been particularly significant to you, to the extent of leading you to start your own business? – Was there any subject/lecturer encouraging projects development? Do you think that organizing and taking part in projects might contribute to enlarge an entrepreneurial vision? Why? – When working in groups, which were the most important aspects? What type of role did you play in group works? Why? – Were there any activities within the subject syllabus particularly aiming to promote the contact with the business world (internships in companies/clubs/schools…)? In what ways have you benefited from that? – Did you undergo any Erasmus program or other university exchange program? If so, how important do you consider it was to your path? Why?
To analyze the intrinsic factors and conditions within the informal curriculum influencing the development of entrepreneurship	– Had any lecturer had an influence on your decision to start your own business? Why? – Had any classmate had an influence on your decision to start your own business? Why? – During the degree did you ever engage in a student associative movement or management boards? Do you consider it to have been important to your path? Why? – Have you developed any activities/projects outside the university yet linked to some subject/lecturer? Do you consider it to have been important to your path? Why?
Most relevant factors	– Which aspect within the undergraduate training had been most relevant to your path? Or do you consider the undergraduate training had no relevance at all?

Note: In what concerns non-entrepreneurs, at the end of the interview, they were informally inquired on the importance of both the lecturers and the subject matters referred by the entrepreneurs/intrapreneurs, so that different conceptions of the same topic could be compared.

Table 6.22 Interview Guide – Common academic factors to entrepreneurs, intrapreneurs and non-entrepreneurs: impact of the continuing training

Continuing training	
To characterize the continuing training the participant had searched for, as well as its effectiveness (ability to meet their needs)	– After finishing your degree, have you invested in ongoing training (Post-Graduate Certificates, Master Degrees, PhD/Research studies, Conferences/ workshops, etc)? Why? To what extent did that training contribute to your path? – When you decided to go for self-employment, how did you manage the issues related to Business Management/ Entrepreneurship?

Table 6.233 Interview Guide – Conclusion of the interview (common to entrepreneurs, intrapreneurs and non-entrepreneurs)

General opinion about entrepreneurship and its relation to training	
To raise suggestions to promote entrepreneurship within the Faculty of Human Kinetics, according to the participants' experience	– In your opinion, what aspects should be enhanced within higher education institutions, and Faculty of Humans Kinetics in particular, in order to promote entrepreneurship and self-employment? – According to you, to what extent is entrepreneurship whether innate or teachable through training?
Interview Validation	
To make sure that no relevant aspect was left unmentioned; To collect suggestions to improve the guide; To conclude the interview.	– Is there anything else you would like to add or consider to be important adding? – Would you like to make any suggestion? Was there any aspect left unmentioned? – What is your opinion about the interview? And about the work underlying it?

Table 6.24 Interview Guide – Lecturers

Extra academic factors	
Personal attributes	
To analyze the importance of personal attributes to the participants' path	– Which attributes do you think you have and that might have influenced your teaching activity, or any student, in particular?
Academic factors	
Undergraduate training	
To characterize the subject	– Which subjects did you teach in that period?
To analyze the intrinsic factors and conditions within the formal curriculum influencing the development of entrepreneurial profiles	– What aspect within faculty might have been of any use in terms of preparing students for business start-up and management? – In your subject did you encouraged entrepreneurial competences in students (such as innovation, creativity, proactivity, initiative)? – In your subject did you encouraged projects development? What kind of projects? Why? – In your subject you use to have group works? Why? Which issues did you wanted to promote with group works? – In your subject did you developed activities with companies/professional world (such as visits or internships in companies/schools/sports clubs)? Why? – Which were the most important contributes of your subject to students' professional development? –Do you think you were a role model for some students? Why?
To analyze the intrinsic factors and conditions within the informal curriculum influencing the development of entrepreneurial profiles	– Did you ever challenged students to create their own company? Why? – Did you developed activities/projects outside faculty with students? Do you think those initiatives are important? Why?
Interview Validation	
To make sure that no relevant aspect was left unmentioned; To collect suggestions to improve the guide; To conclude the interview.	– Is there anything else you would like to add or consider to be important adding? – Would you like to make any suggestion? Was there any aspect left unmentioned? – What is your opinion about the interview? And about the work underlying it?

Note: As regards lecturers, each one was previously informed of the former student who had mentioned him, as well as the grounds on which the reference was made.

General discussion

> *…innovations go against the grain and constantly encounter the inertia of individual habits, academic traditions, and entrenched bureaucracies*
>
> *Gaff (1997, p. 695)*

7.1 Synthesizing main findings

The present thesis was composed by four studies. The major findings of each study will be discussed here in order to achieve an integrated and global perspective of the overall thesis.

7.1.1 Conceptual studies.

A literature review of published articles in top-tier journals of Business, Management, Entrepreneurship and Higher Education with further content analysis was conducted in the chapter 3. The main purpose of this conceptual study was to address the state of the art of theory-building on entrepreneurship education, through the analysis of the contributions published in the last decade (2001-2011). Findings showed that theoretical contributions on entrepreneurship education have been increasing. However, there is still considerable scope for improvement, in particular with articles that expand understanding through new theoretical propositions and testing those propositions in new experimental settings. Theory-building and theory-testing are still rooted in exclusive, non-integrated paradigms and the lack of a sound multidisciplinary, meta-paradigm perspective restricts a more eclectic, comprehensive analysis of entrepreneurship education.

In the second conceptual study presented in chapter 4, we adopted the frameworks of Mialaret (2005/1976), Béchard and Grégoire (2005b), and Fayolle and Gailly (2008) to analyze the domain of entrepreneurship education. Two main purposes were defined: to systematize and structure the theoretical and empirical insights produced within the field; and to analyze the main challenges and emerging solutions in

the entrepreneurial classroom. Several questions were addressed: Which theoretical and empirical insights have been produced in this field and what can we learn from them? How to improve and increase efficacy on the entrepreneurial classroom? Which challenges still remain for educators? Findings showed that a very significant share of research on entrepreneurship education over the period of analysis has sought to evaluate its effectiveness. There is not still a consistent body of knowledge in entrepreneurship education that can provide general insights and tools towards practical applications and learning design. Practitioners need to pick and choose which pedagogical approaches and methods better suit their particular contexts.

7.1.2 Empirical studies.

In chapters 5 and 6 two empirical studies were presented. In the empirical study 1, the main purpose was to understand which variables most influence entrepreneurial intentions of sport sciences undergraduate students, according to the Theory of Planned Behavior (TPB). Several research questions were addressed: which factors determine the entrepreneurial intentions of sport sciences students? Is the TPB fully corroborated in this specific population? Does it explain the entrepreneurial intentions in these students, although in a novelty direction? Does the model of the TPB vary according to gender and professional experience? Findings showed that there is a negative and significant value of subjective norms, suggesting a non-expected inverse association of this construct to predict the entrepreneurial intentions of sport sciences students. On the other hand, the attitudes and the perceived behavioral control had a higher and positive influence predicting students' entrepreneurial intentions, and should therefore be promoted. The Theory of Planned Behavior explains 90% of the variance in entrepreneurial intentions. The model's invariance to gender and professional experience suggests that demographic variables have reduced influence on entrepreneurial intentions when compared with attitudes and perceived behavioral control and it also suggests the homogeneity of guidelines to promote entrepreneurial intentions in the students of sport sciences.

In the empirical study 2, the main purpose was examining the role of undergraduate training in sport sciences entrepreneurial behaviors. Several questions were firstly addressed: where did entrepreneurs/intrapreneurs innovate? Which factors most influenced their paths (in academic, personal, professional and social domains)? Which factors of undergraduate training were important to their entrepreneurial life course? Findings revealed that different factors were perceived as influencing the participants' entrepreneurial life course, namely the entrepreneurial attributes, family, contact with professional setting, social/contextual factors, undergraduate training and continuing education, such as postgraduate training and self-training. A main conclusion was the importance of the active educational training that most participants reported, with three distinct patterns emerging from the analyses: prevalence of undergraduate training, prevalence of continuing training and prevalence of the family and contact with the professional context. The teachers and classmates related with formal and/or informal curriculum were revealed to be also important.

The next section provides an in-depth discussion into the theoretical implications and methodological value of the main findings just reported.

7.2 Theoretical and methodological considerations

The ultimate goal of this thesis was examining and compiling objective information supporting and contextualizing the introduction of entrepreneurial competences in the sport sciences curriculum.

Several institutions and authors recognize the importance of changing higher education system and policies, through a new curriculum organized by competences and learning outcomes in order to meet social demands more efficiently. In improved curricula new competences emerge, and entrepreneurial competences need to be promoted more actively and efficiently. Ratten (2012) highlights the importance of entrepreneurial competences to the development of new sport ventures, stressing their influence on the ability of a sports entrepreneur to successfully perform a task. Entrepreneurial competences are required to help a sports entrepreneur during the

sequential stages of his/her entrepreneurial course. A major driver for understanding the role of entrepreneurial competences is their relevance to business performance and economic growth within the sport sector (Ratten, 2012).

Our research journey started with the analysis of the theoretical contributions in the field of entrepreneurship education, through different lenses, and the development of an original framework to classify these contributions (conceptual study 1). Theory-building plays an important role in the advancement of entrepreneurship education and has been a longstanding concern in research (e.g. Sexton & Bowman, 1984; Hills, 1988; Katz, 2003). However, our findings from chapters 3 and 4 showed that entrepreneurship education research has been more focused on what actually works in the classroom than on developing cutting edge theoretical contributions. A significant body of research focuses on testers, which examine the results of educational programs. This functionalist approach has been criticized by Gioia and Pitre (1990) because it only relies on testing effects, ignoring their corresponding theoretical underpinnings and the changes that should be conducted in order to improve reality.

Several authors have pointed to a lack of established paradigms in theory development in the field of entrepreneurship (Béchard & Grégoire, 2005a). Ireland et al. (2005) claim that, in general, entrepreneurship research is characterized by low paradigm development. According to Busenitz et al. (2003, p. 237), in the field of entrepreneurship, *no powerful unifying paradigm exists, nor do multiple coherent points of view*. In low paradigm fields of research, such as in entrepreneurship education, sometimes it is difficult to build theory and even to discern whether the work produced is theory, because theory-building is a continuous process (Weick, 1995). This helps explain why authors have focused mostly on assessing and analyzing results from different approaches, attempting to determine the conditions and practices that lead to successful entrepreneurship education programs (conceptual study 2).

In chapter 4 we direct our attention to the analysis of the best practices in the entrepreneurial classroom. Nowadays, the crucial question is no longer whether entrepreneurship should be taught, but which are the best methods and strategies to use, because despite the developments in the field of entrepreneurship education, there

are issues which remain overlooked, such as entrepreneurship educators' need for unified contents and teaching methods (Gorman et al., 1997). Pedagogical competences and methodologies still need to be developed (Kuratko, 2005), and questions related with best practices to adopt in the entrepreneurial classroom are emerging, as predicted by Katz (2003).

After analyzing the literature, our findings suggested some inconsistency of the guidelines adopted in the entrepreneurial classroom. The main reason for this fact can be attributed to the large amount of research rooted in exclusive, non-integrated paradigms which prevents a more comprehensive analysis of the field, as mentioned before. Despite this inconsistency, our analysis reveals that individual entrepreneurial competences and opportunity recognition can be developed in the classroom through specific intervention models emphasizing process-based learning and project development.

The conceptual studies developed in chapters 3 and 4 suggest that research (i.e. expanders' articles) shows that entrepreneurship education programs can be built and assessed through frameworks founded on the Theory of Planned Behavior (TPB) proposed by Ajzen (1991). The reasons supporting this suggestion are that TPB is an empirically validated model that allows studying entrepreneurial intentions even without the implementation of the entrepreneurial ideas (Fayolle et al., 2006), which can be useful, for instance, to study the antecedents of entrepreneurial intentions in larger samples. This model has been widely used in different fields. However, to the best of our knowledge, no studies exist that examine entrepreneurial intentions in the sport sciences domain.

In chapter 5, we adopt the TPB to evaluate which variables most influence entrepreneurial intentions of sport sciences students. This study follows a quantitative approach and used structural equations modeling. The TPB model shows that perceived attitudes and perceived behavior control have significant positive impacts on entrepreneurial intentions, while the impact of subjective norms is negative and of small magnitude. Some new insights are provided by the study, namely the negative and weak value of subjective norms as well as the invariance of the model according to gender

and professional experience. However, these patterns might be due to specific characteristics of this sample. It is nevertheless plausible that a similar strategy could equally fit male and female students and with/without professional experience.

After analyzing entrepreneurial intentions in a large sample of sport sciences students, we examined the entrepreneurial life course of former students. This complementary approach between entrepreneurial intentions and behaviors can provide a more comprehensive analysis of the field and provide useful insights to curriculum development (Wolf, Hill & Evers, 2006).

In chapter 6, we develop a multicase study to determine the variables that most influence the entrepreneurial life course of sport sciences former students. This study followed a qualitative approach based on semi-structured interviews and content analysis, using triangulation and replication as validation procedures (Eisenhardt, 1989; Yin, 2003). This research approach allowed extracting the perception of the participants about the most influential factors in their paths. Within-case analysis and cross-case patterns search complementarity showed that educational experience is the most perceived factor influencing entrepreneurial behaviors. Results revealed a higher importance of undergraduate training and entrepreneurial attributes, but continued training, family and contact with the professional context were also mentioned. Findings suggest that informal curriculum plays an influential role during undergraduate training. This provides a powerful tool in the promotion of entrepreneurial competences. The importance of the informal curriculum is intimately related with lecturers' personalities, their actions, and attitudes, as some lecturers serve as role models, in line with Farmer (1997). Lecturers provide role models representing the values of their disciplines. These learning experiences are not found in the formal curriculum and their benefits are well documented, but not all students have access to them.

The adoption of different methodologies to analyze the literature (the taxonomy or the framework), has also the potential to be used further to address trends and gaps in other literature streams, and as a benchmark to assess future developments in research on entrepreneurship education.

All the theoretical and methodological contributions presented in this thesis should serve as a basis for the future reinforcement of this field, as well as a basis to potential practical applications discussed in the next section.

7.3 Practical applications

This section discusses the potential practical applications of the present thesis, regarding sport sciences undergraduate curriculum.

7.3.1 Entrepreneurship education in sport sciences: Future and desirable scenario.

An important application of main findings of theoretical studies is an evaluation framework (Table 7.1) to assess the quality of the literature produced in the field.

Another important application is related with the introduction of entrepreneurial competences in sport sciences curriculum. Entrepreneurship can occur in all areas and sport sciences students can benefit of this interaction, creating their own venture, as entrepreneurs, or innovating inside organizations, as intrapreneurs.

In Portugal and according to GEM 2010 (SPI Ventures, IAPMEI, & Fundação Luso-americana, 2010), entrepreneurial activity mostly emerges due to unemployment. Most people have difficulties in seizing opportunities and in exploiting them, when compared with other countries of the EU.

The sport sciences field is no exception in what concerns unemployment and generalization of precarious contracts. All these reasons justify the present study and we argue that entrepreneurship education ought to be fostered and entrepreneurial competences should be promoted by the sport sciences curriculum through the Six-Step Model (AEHESIS, 2006).

Table 7.1. Framework of literature assessment

Analysis of the literature			
Why?	Learning and socio-economic objectives		
What?	Knowledge, contents and theories		
For whom? (Whom)	Audience characteristics, focus, level of analysis		
How?	Pedagogical methodologies and techniques		
For which results?(Which)	Evaluation criteria and measurement tools		
Analysis of theoretical contribution			
Reporters	Descriptive analysis; replicate past findings		
		Content	**Foundation**
Testers	Test existing theory in new contexts	What, How, When, & Why	Interpretivist, Radical Humanist, Radical Structuralist, Functionalist, & Metaparadigm
Builders & Qualifiers	Development of new constructs, relationships or processes, and restriction/moderation of established relationships or processes		
Expanders	Development of new constructs, relationships or processes, while also testing existing theory		
Procedures			
Analysis of the literature			
To analyze contents addressed more frequently in the literature and reflect about its consequences.			
Analysis of theoretical contribution			
Description: articles are classified according to whether they attempt to make a significant theoretical contribution (reporter, tester, builder and qualifier, expander);			
Content: articles with significant theoretical contributions (testers, builders and qualifiers, expanders) are examined according the content of theoretical contributions using Whetten's (1989) building blocks as a reference;			
Foundation: articles with significant theoretical contributions (testers, builders and qualifiers, expanders) are classified according to the paradigms described by Gioia and Pitre (1990).			

Following AEHESIS (2006) suggestion, we used this model as a framework or set of categories, which allowed us to develop new insights in the field (Table 7.2).

Notwithstanding focusing on a specific context, many insights can be derived for other contexts. After analyzing all the data (actual and former students/entrepreneurs or intrapreneurs', lecturer's, classmates), good practices in the field, relevant literature,

we suggest several guidelines to promote entrepreneurial competences, through formal and informal curriculum, as well as evaluation and follow-up mechanisms.

Table 7.2. Six-Step Model (AEHESIS, 2006, p. 5)

Step I	Professional Area Action: Definition of the area
Step II	Standard Occupations Action: Definition of the three major occupations
Step III	Activities Action: Definition of four/five activities for these occupations
Step IV	Competences Action: Definition of corresponding competences for each activity listed before
Step V	Learning Outcomes Action: Specification of learning outcomes related to the agreed competences for the three relevant occupations
Step VI	Curriculum Model Action: Production of curriculum model for each occupation

Competences are the characteristics of a person that are related to superior performance in a job and can be common across situations (Spencer & Spencer, 1993). For Man, Lau and Chan (2002) competences can only be demonstrated by a person's behavior and actions. According to Perrenoud (2000), it refers to the ability to mobilize/transfer a set of cognitive resources (knowledge, skills, information) to solve efficiently different issues. For Man et al., (2002) entrepreneurial competences are considered a higher-level characteristic encompassing personality traits, skills and knowledge, and therefore can be seen as the total ability of the entrepreneur to perform a job role successfully.

Our main purpose and original contribute is to provide guidelines (strategies and methodologies), based on main findings of this study, as regards formal and informal curriculum, to promote entrepreneurial competences in sport sciences, through the Six-Step Model (AEHESIS, 2006). This model was considered to close the gap between social needs in relation to the job market and the related academic curricula, what is in line with curriculum development principles.

Our proposal focus in Steps IV, V, VI of this model and consists in the introduction of entrepreneurial competences, which will influence the learning outcomes, and consequently, the curriculum model for each occupation.

Man et al. (2002) propose a *competence cluster* and Lans, Bergevoet, Mulder and Van Woerkum (2005) described each one of the entrepreneurial competences: opportunity (competences related to recognizing and developing market opportunities through various means), relationship (competences related to person-to-person or individual-to-group based interactions), conceptual (competences related to different conceptual abilities which are reflected in the behavior of the entrepreneur), organizing (competences related to the organization of different internal, external, human, physical, financial and technological resources), strategic (competences related to setting, evaluating and implementing the strategies of the firm) and, commitment competences (competences that drive the entrepreneur to move ahead with the business). They also emphasizes that some competences are changeable and learnable, possible to be changed in a relatively short-term, which enables the possibility of an educational intervention. These competences can and should be developed in all subjects. In Table 7.3 we present some strategies and methodologies to promote these competences through curriculum, within each one of the occupations in sport sciences (Physical Education, Sport Management, Health & Fitness and Sport Coaching). Besides entrepreneurial competences, proactivity and capacity for reflection, autonomy, assimilation of knowledge and humility, as well as creativity and innovation should be fostered in classes. The contextualization of these proposals is very important due to the appropriateness of the guidelines to the specific population, in order to increase the efficacy of the measures adopted.

The introduction of new competences, will require new curriculum models and based on our findings we stress the importance of informal curriculum. Diversity and social changes challenges the undergraduate curriculum to represent learning in multiple forms addressing different needs and maximizing each student potential, where both formal and informal curriculum, should work together to support student learning and in this case, to promote entrepreneurial competences.

Table 7.3. Guidelines to promote entrepreneurial competences in sport sciences curriculum

Entrepreneurial competences should be promoted in sport sciences…	
…in the formal curriculum through:	…in the informal curriculum through:
- Entrepreneurial environment, mindsets and attitudes - Internet/online social media - Multidisciplinary approaches - Specific entrepreneurship training and optional activities related to entrepreneurship - Experiential learning, rather than the transmission of knowledge - Learner's active participation and students-approved system to enhance student motivation in the learning process - Contingency and constructivist approaches - Direct participation of experienced entrepreneurs in training programs (analyses examples of success and failure) - Internships in professional contexts with local and external mentoring - Visits to companies - Development of projects about interventions/start-ups - Experience of failure, risk, responsibility and opportunity identification training in the learning process - A portfolio of techniques to practice entrepreneurship - Team work - Worksheets for problem solving - Brief reflections in classes - Communities of practice	- Entrepreneurial environment, mindsets and attitudes - Internet/online social media - Diverse educational experiences - Development of projects about interventions/start-ups - Visits to companies - Entrepreneurship awareness workshops/ seminars and competitions - Entrepreneurship awards for former students (where they can share experiences with students) - R&D centers in entrepreneurial studies - Themed reflection groups outside class - University sports
How to reduce the gap between entrepreneurial intentions and behaviors through formal or informal curriculum	
Implementation intentions* - Example: *Material*: paper and pencil exercise; *You are more likely to achieve your goal of being an entrepreneur if you decide in advance when, where and how this is to be achieved and then stick to your plan. Please fill the spaces below:* *WHEN are you going to create your own business? Which year, month, day?* *WHERE are you going to develop your own business?* *HOW will you do it? What kind of organization it will be? How many partners? How much money you need to spend? Have you already developed your business plan? If not, do it as soon as possible!*	
Commitment - Example: *Material*: paper and pencil exercise (commitment form); *The commitment form can be applied after the exercise of implementation intention or just by itself.* *I hereby make a commitment to carry out intentions I have made to develop my own business, in the year, month and day previously mentioned, creating a business plan…*	
Combination of motivational techniques + volitional techniques* - Example: *Motivational techniques:* to promote awareness seminars and entrepreneurship workshops; to invite recognized entrepreneurs to share their experience; *Volitional techniques:* implementation intention (see 1st exercise).	

Jones and Ewell (1993) present a list of good practices in undergraduate education, where some of them should guide the aforementioned guidelines: provide coherent and progressive learning, create synthesizing experiences, integrate education and experience, create active learning experiences, require ongoing practice of skills, assess learning and give prompt feedback, plan collaborative learning experiences (it promotes behavior expected after college), provide considerable time on task (knowledge is fostered by thorough explanation, discussion, and application), respect diverse talents and ways of knowing, increase informal contacts with students (students value the mentoring and advice offered by faculty outside the classroom), give special attention to the early years.

According to Wolf et al., (2006) the curriculum should be assessed to identify aspects that need to change, or that are not working; to assess the effectiveness of changes that already have been made; to demonstrate the effectiveness of the current program; and to meet review requirements or satisfy professional accreditations. Bird (1995) mentions that there are different methods to assess entrepreneurial competences, which can also be applied to evaluate curricula: qualitative, quantitative, retrospective, concurrent, objective and self-report based. Lans et al. (2005) stress the importance of focus not merely on behavior outputs, but also on the ongoing training and education process; the importance of rating competences in more than one way (to use different assessment methods). Thus, we propose some evaluation and follow-up mechanisms to evaluate the effectiveness of those changes: longitudinal studies to analyze modifications in behaviors or other changes, self-assessment questionnaires, stakeholders' questionnaires, observation.

Findings from empirical studies together with those from the conceptual studies, contributed to the main purpose of this thesis, of improving curricula and meet actual social needs, because according to Patesan and Bumbuc (2010) an improved curriculum can help move society forward, but above all it is important to remember that a curriculum is not helpful unless it meets the needs of the society. The adoption of a new idea is always a gradual and slow process, because it often involves confrontation with norms and values (Rogers, 2003), and several impediments emerge (e.g. faculty,

economic and politic constraints), although this should not be an excuse to give up, from a better future. This author argue that the diffusion of innovations is one of the most important processes of humankind and an important issue related with the rate of adoption of an innovation is the compatibility with the values, beliefs, and past experiences of individuals in this social system. It is not easy to change and introducing innovations requires change in individuals and institutions, which is a difficult process, although not an impossible one.

7.4 Suggestions for future research

As pointed out by Low and MacMillan (1988), occasionally it is important to stop, reflect and analyze what has been done, identifying new trends and challenges. Once more and after developing these studies, it is a good time to stop and reflect, because when a process is over, another is always beginning, where new trends and challenges emerge. This section tries to frame some future perspectives on this field of research, reinforcing some appeals made in the past, and introducing new ones. At the moment, two main complementary paths (research about theory and practice) appear to steer the next research endeavors.

In what concerns the development of theory, a metaparadigm approach (involving researchers from different fields) should be pursued (Gioia & Pitre, 1990); case studies should be used to build theory (Eisenhardt, 1989); frameworks should be improved; and, researchers should build cumulative theories, instead of creating new ones, as a way to make develop and increase the quality of the scientific knowledge (Fiet, 2000b).

On the other hand, and in order to develop and improve practices in the field, we present five empirical-methodological issues derived from the present thesis, which will be matter of further exploration.

First, instead of creating whole new entrepreneurship education programs, use previous and already developed programs and build upon them; when analyzing and assessing entrepreneurship education programs, researchers should focus on compulsory entrepreneurship courses, or on purposeful samples; provide more details

of criteria and use developed and validated tools/framework (Fayolle & Gailly, 2008); to undertake empirical studies testing existing theories and methodologies (Colquitt & Zapata-Phelan, 2007).

Second, and due to the importance of longitudinal studies in the analysis of causal attributions (e.g. as modifications of behaviors or other changes), we think they should be conducted more often; we also suggest that future studies evolve triangulation of data (besides self-reported data). In qualitative research the use of triangulation constitutes one way to increase both reliability and validity (e.g. Willig, 2001; Yin, 2003) and should not be forgotten.

Third, to analyze the impact of undergraduate training and continuing education in fostering entrepreneurship, focusing in other areas (e.g. sport sciences), which are not usually studied in association with entrepreneurship; to analyze the importance of formal and informal curriculum for the entrepreneurial success. Education Sciences appears to be a promising field within entrepreneurship research.

Forth, to analyze the influence of different variables on entrepreneurship: family, associative movement, student associations, sports (especially top-level and combat sports), education abroad, and childhood.

Fifth, is very important to provide training to foster entrepreneurial competences to parents and educators, as well as to promote awareness seminars in different contexts about entrepreneurship, entrepreneurship education and entrepreneurial competences.

It is interesting to note that the recommendations made by Low and MacMillan (1988) are still updated and some of them are in line with our suggestions. These authors mention six research dimensions to be addressed by researchers when developing entrepreneurship programs: purpose (should be clearly stated and researchers should link the specific purpose of their study to the overall purpose of entrepreneurship); theoretical perspective (future research should be theory driven, with clearly stated theoretical assumptions and new theoretical perspectives should be adopted); focus (the recently observed trend toward more contextual and process-oriented research should continue); level of analysis (multiple levels of analysis: individual, group,

organization, industry and society, should be considered in order to better understand the entrepreneurial phenomenon); time frame (studies should employ a wide time frame in order to provide greater insights); methodology (should be theory driven, with a priori hypotheses, evolving multiple methods and more exploratory).

More recently Steyaert, Hjorth & Gartner (2011) propose six practices to keep entrepreneurship studies imaginative, which we also stress and reinforce: creating new words and concepts, exploring boundaries, affecting community scholarship, affecting entrepreneurship education (think the ways education can be conceived), contextualizing through participation (the importance of contextualize research projects) and reconceptualising method (undertake a debate about method).

Based on our studies and main findings, we propose ideas for further research that may have considerable potential to theory and practice in both entrepreneurship and sport sciences fields. This direction of research should be pursued in order to improve curricula and students' professional future. Through the complementarity of Sport Sciences, Education Sciences and Sport Management it will be possible to foster entrepreneurship education in curriculum.

Studies like this, contribute for AEHESIS (2006) appeals and suggestions for further research in sports field, such as: the development of initiatives to build a *knowledge society* in terms of competences in the sport sector and to the improvement of Six-Step Model in all sport sectors.

7.5 References

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